

Item No. 17

Supplemental Material

For

City of Sacramento

City Council
Housing Authority
Redevelopment Agency
Economic Development Commission
Sacramento City Financing Authority

Agenda Packet

Submitted: 4/20/07

For the Meeting of: 4/26/07

- Additional Material
- Revised Material

Subject: Vacation: 3rd Street Access Ramp South of Capitol Mall

RE: Traffic Study for said project

Contact Information: Thomas Adams, 808-7929; Jesse Gothan, 808-6897

Please include this supplemental material in your agenda packet. This material will also be published to the City=s Intranet. For additional information, contact the City Clerk Department at Historic City Hall, 915 I Street, First Floor, Sacramento, CA 95814-2604 B (916) 808-7200.

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Dowling Associates, Inc.

Date: February 14, 2007

Memorandum

To: Jesse Gothan, City of Sacramento

cc:

From: Mark Bowman/Shusuke Iida

Reference #: P05003.11

Subject: Traffic Analysis for Sacramento Capitol Mall Ramp Closures

Introduction

Dowling Associates was retained to prepare a traffic study to evaluate the effects of closing two ramps connecting Capitol Mall and 3rd Street in the City of Sacramento. The study evaluated the following conditions:

- Existing Conditions
- Baseline No Project
- Baseline Plus Project
- 2030 No Project
- 2030 Plus Project

The following three intersections were evaluated:

1. 3rd Street & L Street
2. 3rd Street & Capitol Mall
3. 3rd Street & N Street

Methodology

The traffic volumes for Existing, Baseline No Project, and 2030 No Project were obtained from the Sacramento Downtown Traffic Study. Traffic volumes with the ramp closure project were developed by reassigning traffic to the shortest path with implementation of the project. Traffic volumes are shown as an attachment along with graphics showing the roadway configurations.

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The signalized study intersections were evaluated with the Synchro software package using the operational methodology outlined in the *Highway Capacity Manual* (Transportation Research Board, Washington, D.C., 2000, Chapters 10 and 16). This procedure calculates an average stopped delay per vehicle at a signalized intersection, and assigns a level of service designation based upon the delay. The method also provides a calculation of the volume-to-capacity (v/c) ratio of the critical movements at the intersection. Table 1 shows level of service criteria for signalized intersections. Level of service worksheets are shown as an attachment.

Table 1
Level Of Service Criteria – Signalized Intersections

| Level of Service (LOS) | Average Delay (seconds/vehicle) | Description |
|------------------------|---------------------------------|--|
| A | ≤ 10 | Very Low Delay: This level of service occurs when progression is extremely favorable and most vehicles arrive during a green phase. Most vehicles do not stop at all. |
| B | $> 10 \text{ and } < 20$ | Minimal Delays: This level of service generally occurs with good progression, short cycle lengths, or both. More vehicles stop than at LOS A, causing higher levels of average delay. |
| C | $> 20 \text{ and } < 35$ | Acceptable Delay: Delay increases due to only fair progression, longer cycle lengths, or both. Individual cycle failures (to service all waiting vehicles) may begin to appear at this level of service. The number of vehicles stopping is significant, though many still pass through the intersection without stopping. |
| D | $> 35 \text{ and } < 55$ | Approaching Unstable Operation/Significant Delays: The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume / capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable. |
| E | $> 55 \text{ and } < 80$ | Unstable Operation/Substantial Delays: These high delay values generally indicate poor progression, long cycle lengths, and high volume / capacity ratios. Individual cycle failures are frequent occurrences. |
| F | > 80 | Excessive Delays: This level, considered unacceptable to most drivers, often occurs with oversaturation (that is, when arrival traffic volumes exceed the capacity of the intersection). It may also occur at nearly saturated conditions with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels. |

Source: Transportation Research Board, *Highway Capacity Manual*, Washington, D.C., 2000, pages 10-16 and 16-2.

Project impacts were determined based on the City of Sacramento's significance criteria. For the purposes of this analysis, a significant traffic impact at signalized intersections occurs when:

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- The project degrades peak period level of service (LOS) from A, B, or C (without the project) to D, E, or F (with the project); or,
- The level of service (without project) is D, E, or F and project generated traffic increases the average vehicle delay by 5 seconds or more.

These standards have been developed consistent with a goal set forth in the City of Sacramento, General Plan Update (1988). Specifically, Section 5-11 - Goal D, states to "Work towards achieving a Level of Service C on the City's local and major street system."

Existing Conditions

The existing AM and PM peak hour intersection levels of service are shown in Table 2. The calculations indicate all the study intersections operate at acceptable levels of service during both peak hours.

**Table 2
Intersection Levels of Service – Existing Conditions**

| Intersection | AM Peak Hour | | PM Peak Hour | |
|------------------------|------------------|--------------------|------------------|--------------------|
| | LOS ¹ | Delay ² | LOS ¹ | Delay ² |
| 1) 3rd St/L St | B | 12.8 | B | 15.1 |
| 2) 3rd St/Capitol Mall | B | 18.6 | C | 21.4 |
| 3) 3rd St/N St | B | 16.7 | A | 9.8 |

Source: Dowling Associates, Inc., 2006

¹ LOS = Level of Service

² Average delay in seconds

Baseline Conditions

Baseline Conditions include traffic volumes expected to occur after development of Downtown projects already approved. The analysis also assumes the following changes to the intersection configuration as a result of the plan to convert 3rd Street to two-way traffic between Capitol Mall and L Street:

- 3rd Street & L Street – add one northbound left-turn and one northbound through lane¹
- 3rd Street & Capitol Mall – add one eastbound left-turn lane and re-stripe one westbound through lane to a shared through/right lane, add one southbound right-turn lane to have one right turn lane, one through/right lane, one through lane, and one through/left lane¹

¹ Lanes were determined from a drawing provided by Samar Hajeer on January 11, 2007.

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- Signal phasing changed to accommodate new movements, but the cycle lengths remained the same

Traffic volumes for the Baseline Plus Project Conditions were developed by reassigning traffic to the shortest path assuming closure of the ramps. All the traffic that would use the ramps was reassigned through the intersection of 3rd Street & Capitol Mall. The analysis assumed the following:

- One eastbound through lane at the intersection of 3rd Street & Capitol Mall would be re-striped to a shared through/right lane to accommodate the reassigned traffic.
- Signal phasing splits and offsets would be changed to accommodate new movements, but the cycle lengths would remain the same.

The AM and PM peak hour intersection levels of service for Baseline Conditions without and with the project are shown in Table 3. The calculations indicate all the study intersections would continue to operate at acceptable levels of service during both peak hours.

Table 3
Intersection Levels of Service – Baseline Conditions

| Intersection | Without Project | | | | With Project | | | |
|------------------------|------------------|--------------------|------------------|--------------------|------------------|--------------------|------------------|--------------------|
| | AM Peak Hour | | PM Peak Hour | | AM Peak Hour | | PM Peak Hour | |
| | LOS ¹ | Delay ² |
| 1) 3rd St/L St | B | 17.2 | C | 32.7 | B | 16.7 | C | 22.3 |
| 2) 3rd St/Capitol Mall | B | 15.8 | C | 24.7 | B | 16.4 | C | 27.1 |
| 3) 3rd St/N St | B | 14.3 | B | 12.0 | B | 16.5 | B | 12.4 |

Source: Dowling Associates, Inc., 2006.

¹ LOS = Level of Service

² Average delay in seconds

Note: Bold values indicate a potential significant impact.

2030 Conditions

Year 2030 Conditions assumes the same roadway and intersection configuration as Baseline Conditions. Traffic volumes for the 2030 Plus Project Conditions were also developed by reassigning traffic to the shortest path assuming closure of the ramps, as described above for the Baseline Plus Project Conditions.

The AM and PM peak hour intersection levels of service for 2030 Conditions without and with the project are shown in Table 4. The level of service at the intersection of 3rd & L Streets would be improved by the project, which would eliminate the westbound traffic movement from the single lane on L Street that serves traffic heading toward the Tower

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Bridge. This traffic would be shifted to the two left-turn lanes onto southbound 3rd Street. The project would cause a drop in level of service at the intersection of 3rd Street & Capitol Mall, where the level of service would drop from LOS C to LOS E. This would be a significant impact. The intersection of 3rd & N Streets would continue to operate at acceptable levels of service in 2030 after implementation of the project.

Table 4
Intersection Levels of Service -- 2030 Conditions

| Intersection | Without Project | | | | With Project | | | |
|------------------------|------------------|--------------------|------------------|--------------------|------------------|--------------------|------------------|--------------------|
| | AM Peak Hour | | PM Peak Hour | | AM Peak Hour | | PM Peak Hour | |
| | LOS ¹ | Delay ² |
| 1) 3rd St/L St | B | 18.7 | E | 75.6 | B | 18.0 | C | 34.4 |
| 2) 3rd St/Capitol Mall | B | 17.6 | C | 22.6 | C | 25.3 | E | 62.9 |
| 3) 3rd St/N St | B | 15.4 | B | 14.3 | B | 12.4 | A | 4.3 |

Source: Dowling Associates, Inc., 2006.

¹ LOS = Level of Service

² Average delay in seconds

Note: Bold values indicate a potential significant impact.

Mitigation Measures

Intersection operations were analyzed to determine if any mitigation measures would be needed to maintain acceptable peak hour levels of service at the study intersections for the Baseline Plus Project and 2030 Plus Project Conditions.

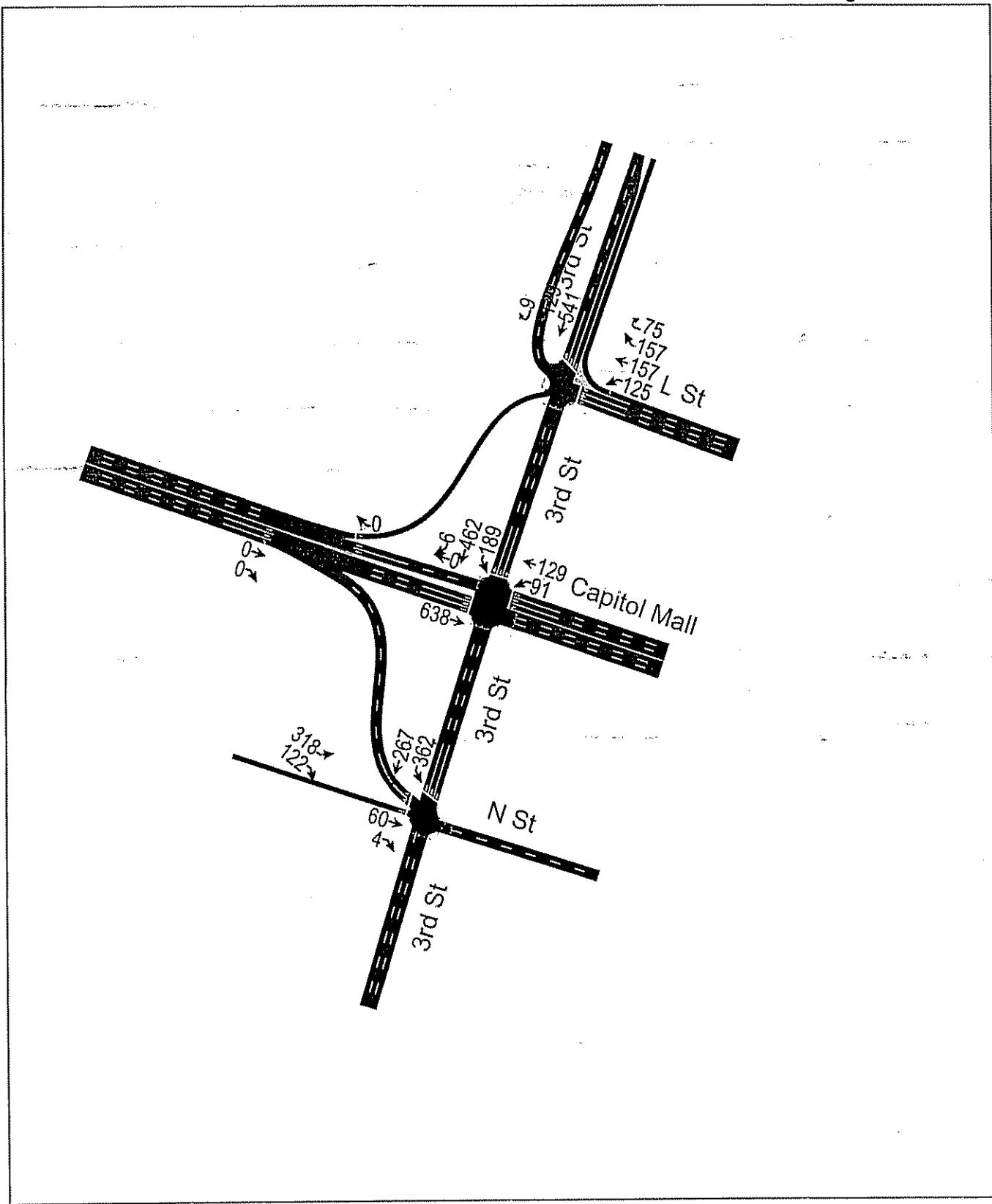
Impact 1: Reassignment of traffic as a result of the ramp closure would cause the intersection of 3rd Street & Capitol Mall to operate at LOS E in the PM peak hour under 2030 Plus Project Conditions.

Mitigation 1: Provide a southbound free right-turn lane at the intersection of 3rd Street & Capitol Mall and widen the westbound departure lanes from two lanes to three lanes. Westbound Capitol Mall at the I-5 overpass is currently three lanes wide downstream of the existing ramp merge. The third lane would need to be extended to the intersection of 3rd Street & Capitol Mall as part of this mitigation measure. After implementation of the mitigation measure, the intersection would operate at LOS B (16.4 seconds delay) during the AM peak hour and LOS C (32.0 seconds delay) during the PM peak hour.

Level of significance after mitigation: Less than significant.

Capitol Mall Slip Street Closures

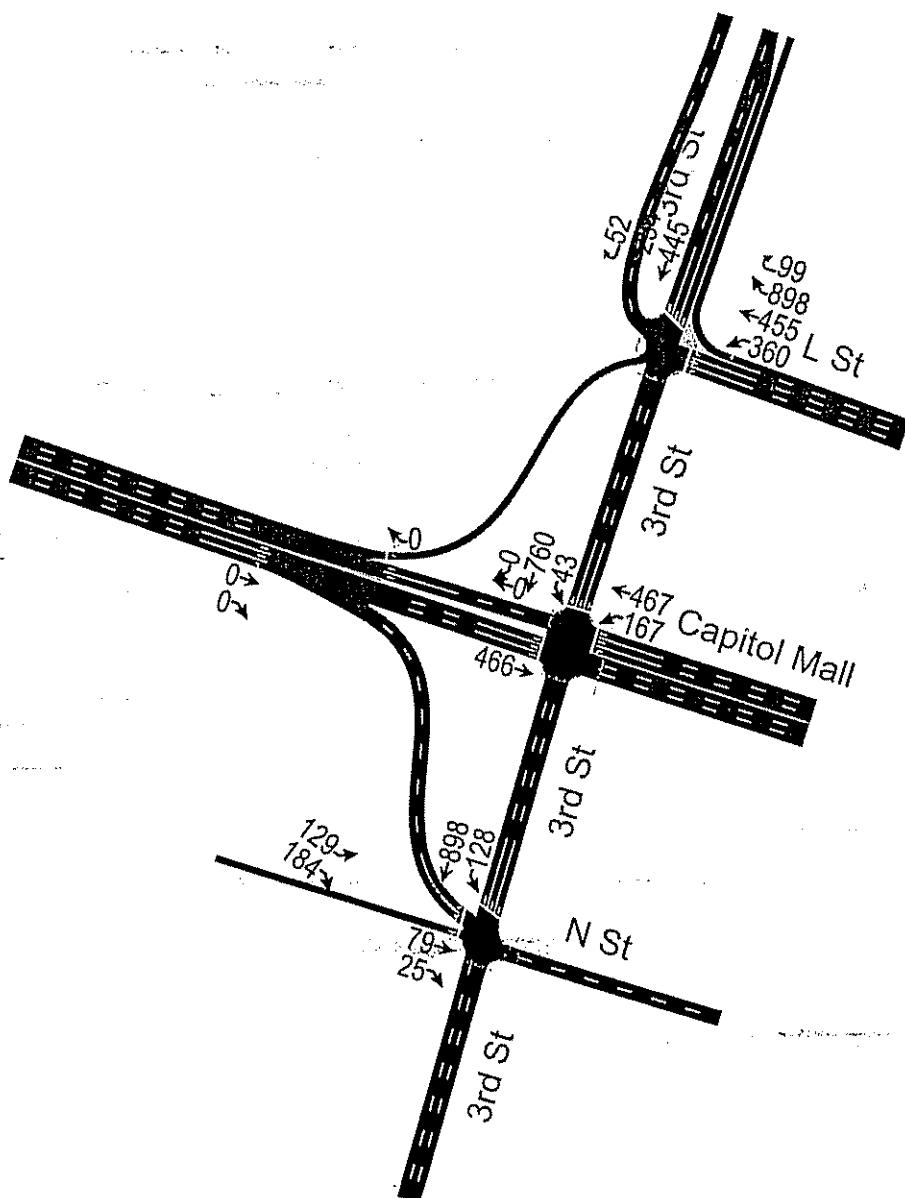
**Existing Conditions
Timing Plan: AM Peak**



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Capitol Mall Slip Street Closures

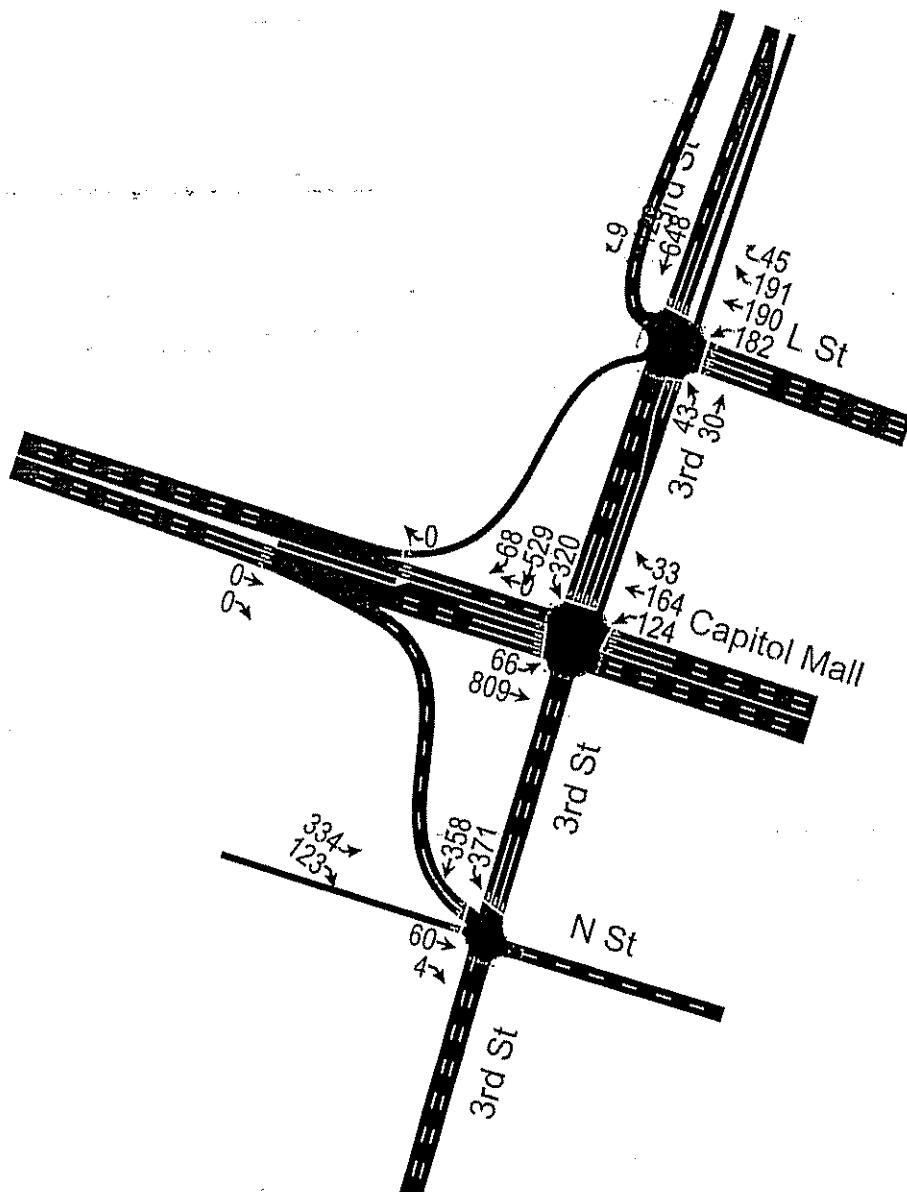
**Existing Conditions
Timing Plan: PM Peak**



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Capitol Mall Slip Street Closures

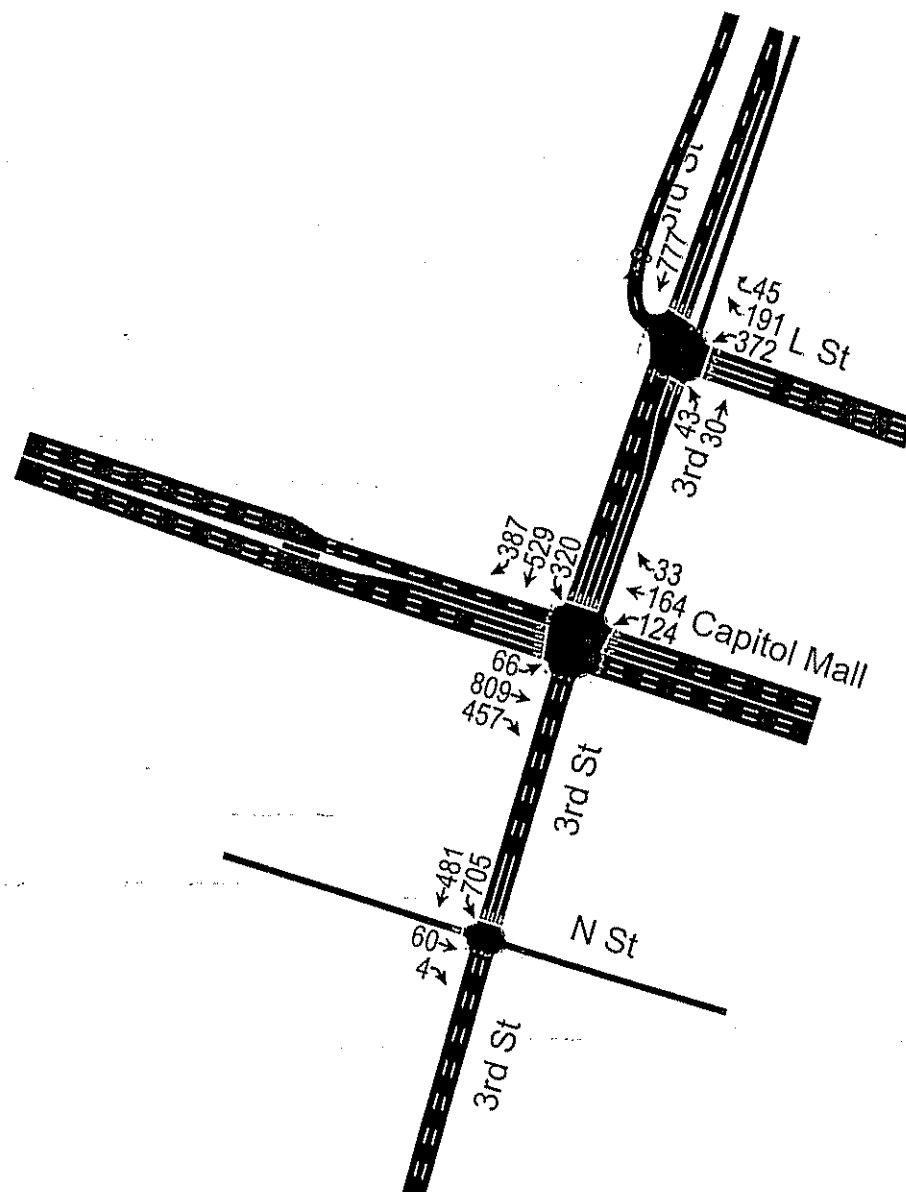
**Baseline Conditions
Timing Plan: AM Peak**



1/11/2007

Capitol Mall Slip Street Closures

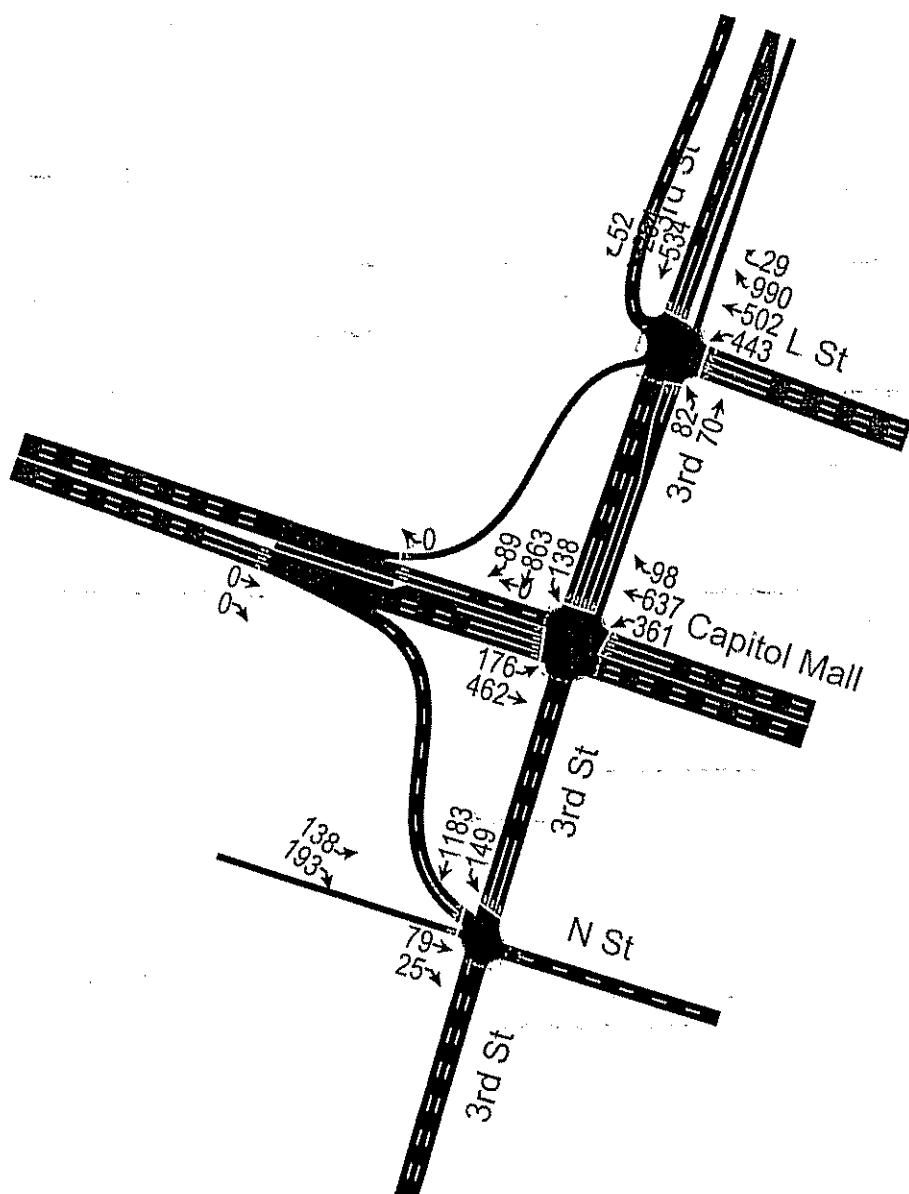
**Baseline + Project Conditions
Timing Plan: AM Peak**



1/11/2007

Capitol Mall Slip Street Closures

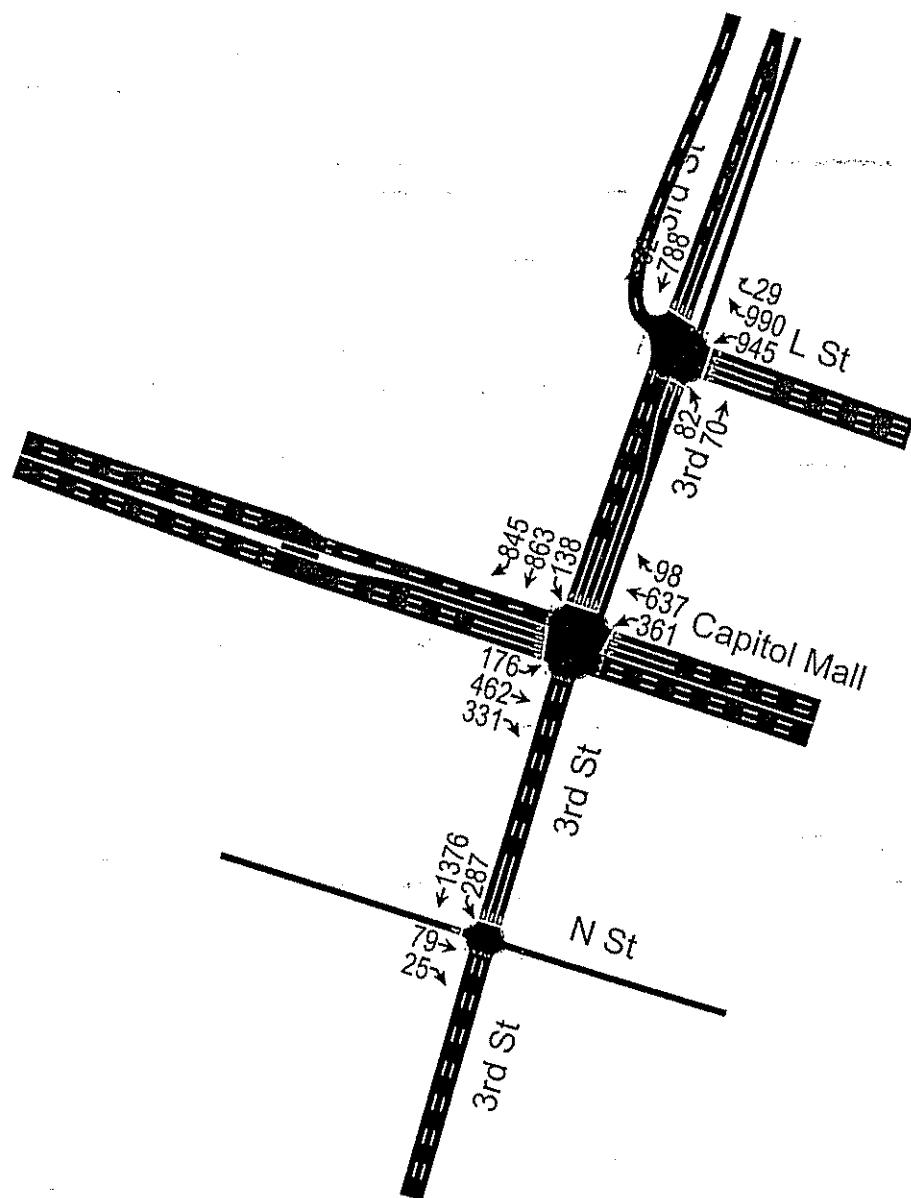
**Baseline Conditions
Timing Plan: PM Peak**



1/11/2007

Capitol Mall Slip Street Closures

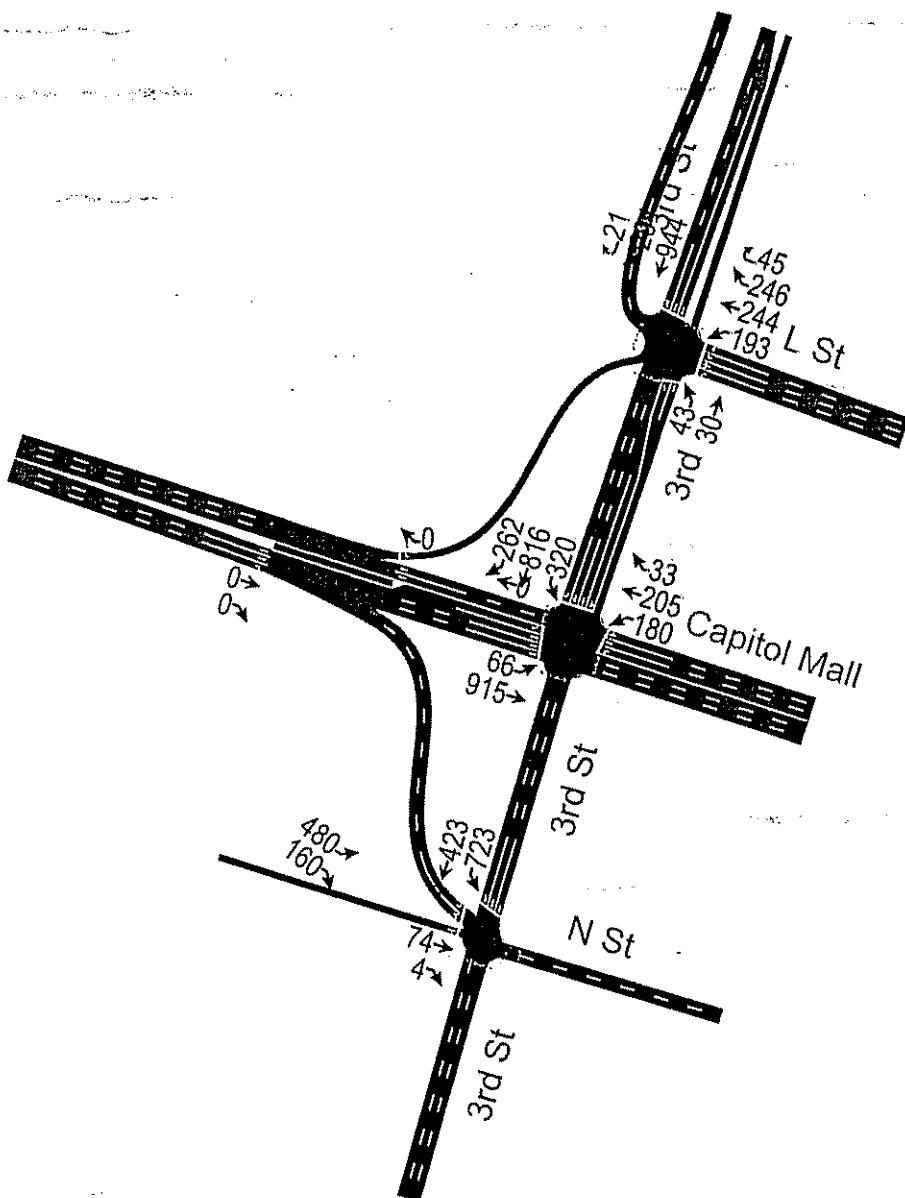
Baseline + Project Conditions
Timing Plan: PM Peak



1/11/2007

Capitol Mall Slip Street Closures

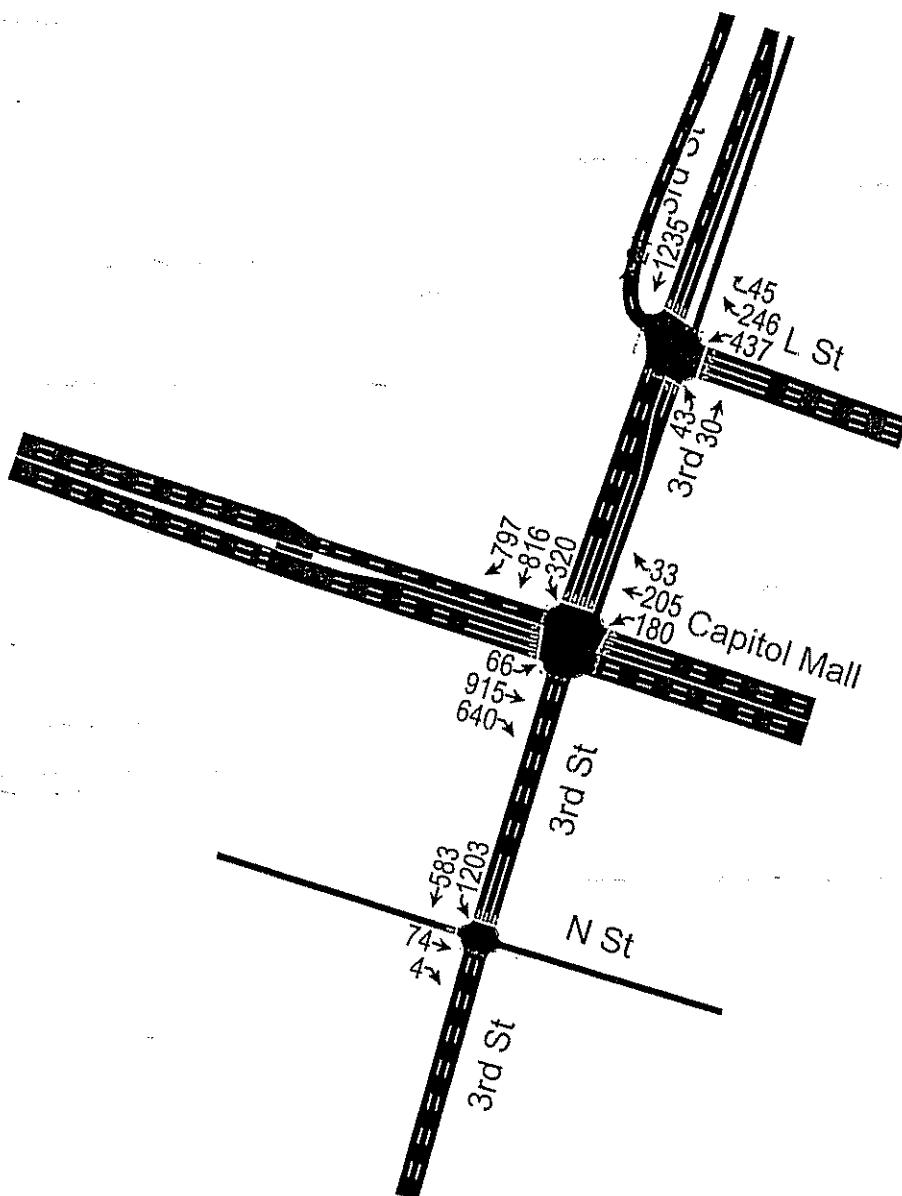
**2030 Conditions
Timing Plan: AM Peak**



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Capitol Mall Slip Street Closures

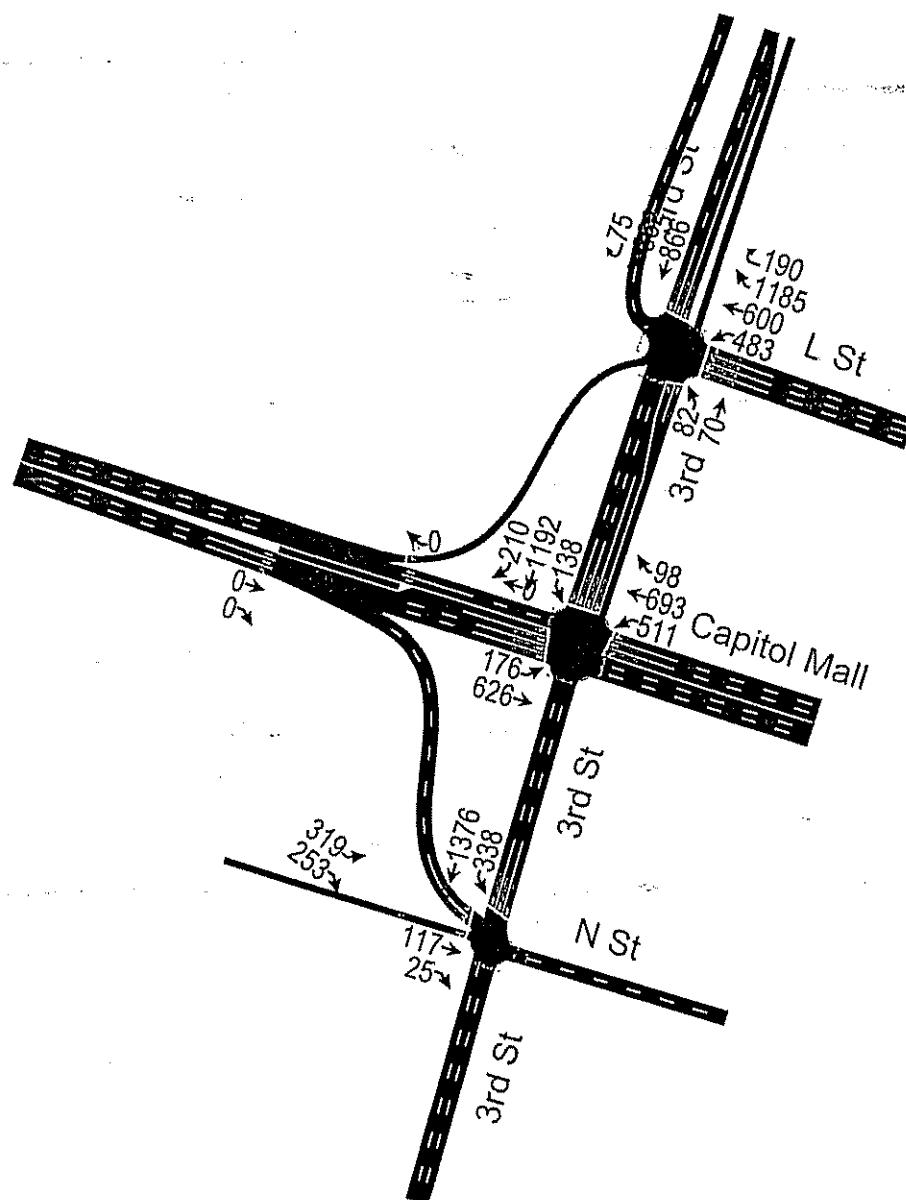
2030 + Project Conditions
Timing Plan: AM Peak



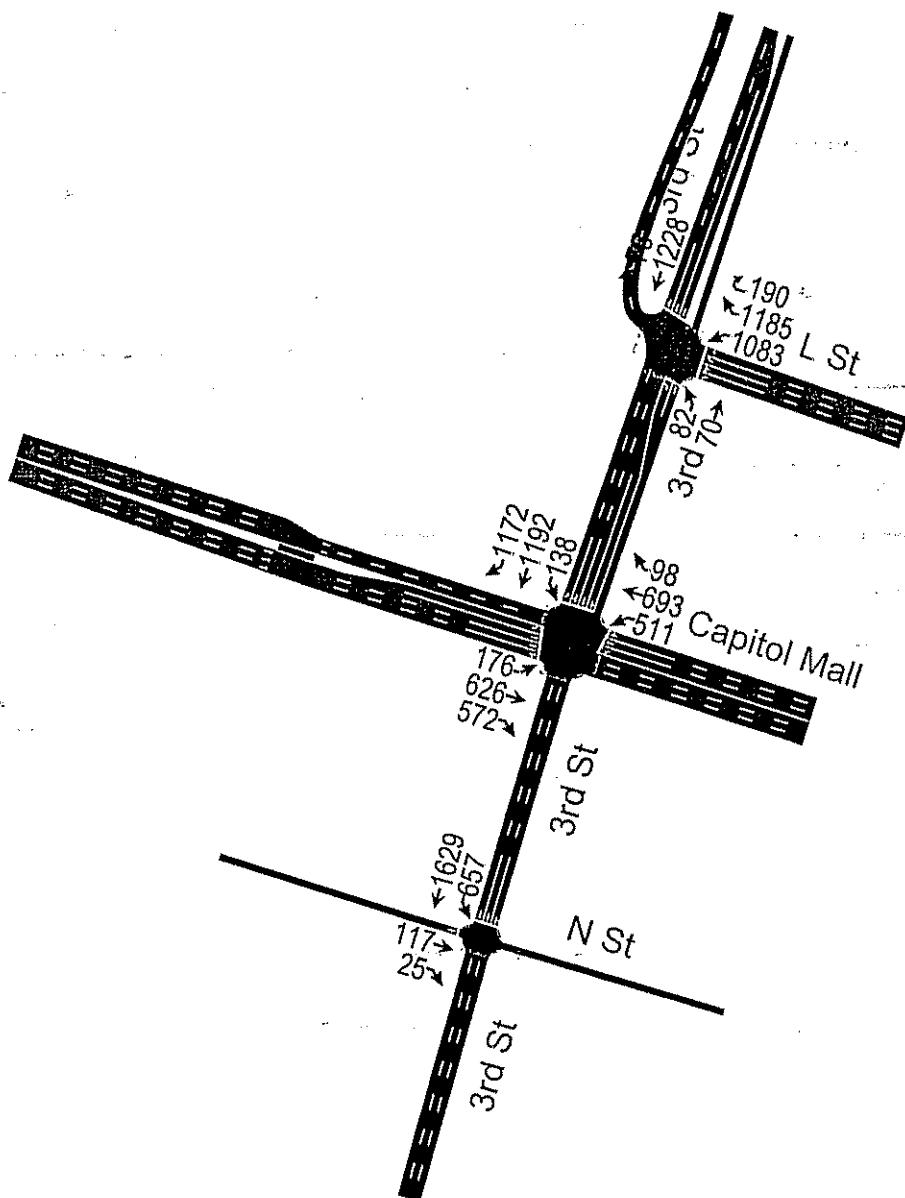
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Capitol Mall Slip Street Closures

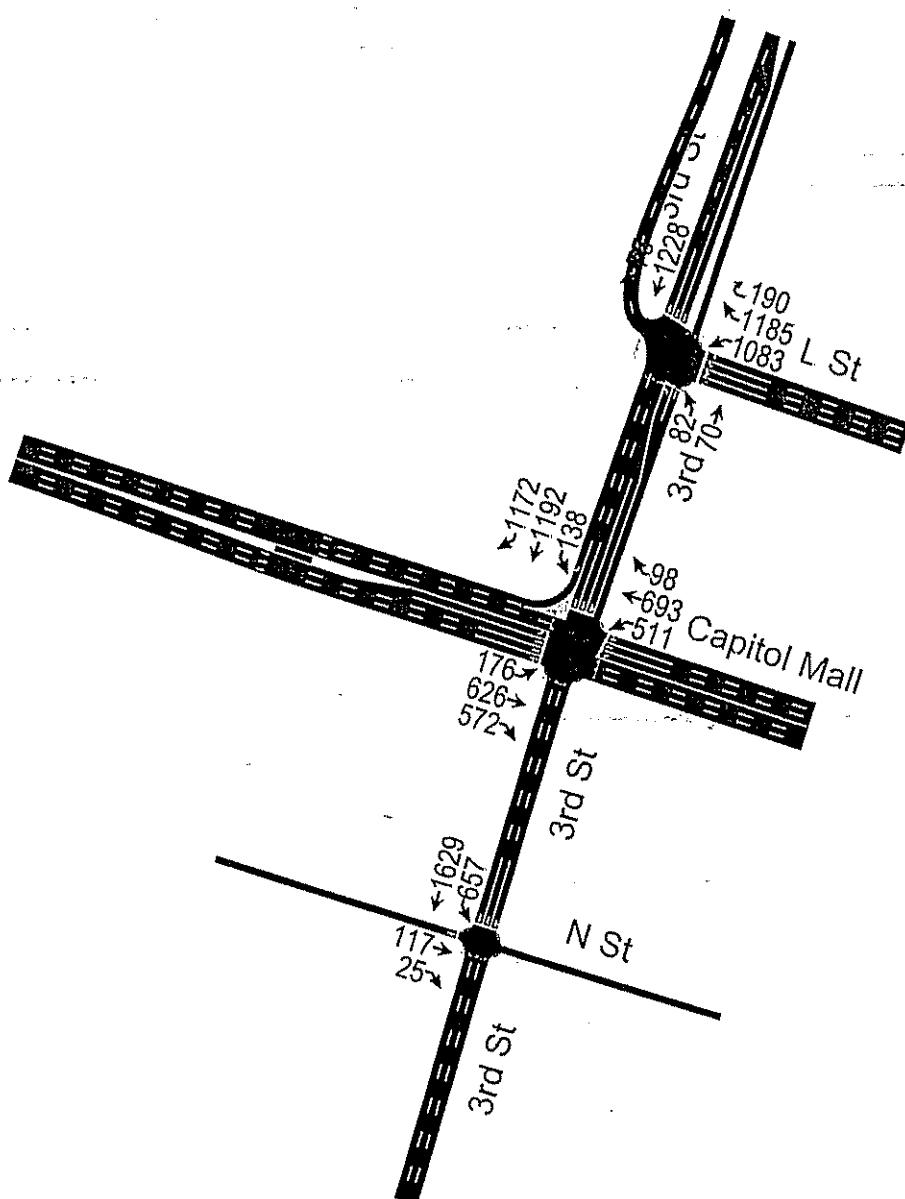
2030 Conditions
Timing Plan: PM Peak



1/11/2007



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HCM Signalized Intersection Capacity Analysis

1: L St & 3rd St

12/13/2006



| Movement | WBL | WBT | WBR | WBR2 | SBT | SBR | SBR2 |
|------------------------|------|------|------|------|-------|------|------|
| Lane Configurations | ↑ | ↔ | ↑ | ↑ | ↑↑↑ | | |
| Volume (vph) | 125 | 157 | 157 | 75 | 541 | 129 | 9 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | |
| Lane Util. Factor | 0.95 | 0.91 | 0.95 | 1.00 | 0.91 | | |
| Frt | 1.00 | 0.99 | 0.85 | 0.85 | 0.97 | | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Satd. Flow (prot) | 1681 | 1667 | 1504 | 1583 | 4930 | | |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Satd. Flow (perm) | 1681 | 1667 | 1504 | 1583 | 4930 | | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 125 | 157 | 157 | 75 | 541 | 129 | 9 |
| RTOR Reduction (vph) | 61 | 4 | 0 | 41 | 2 | 0 | 0 |
| Lane Group Flow (vph) | 51 | 182 | 141 | 34 | 677 | 0 | 0 |
| Turn Type | Perm | | Perm | Perm | | | |
| Protected Phases | | 2 | | | 4 | | |
| Permitted Phases | 2 | | 2 | 2 | | | |
| Actuated Green, G (s) | 32.5 | 32.5 | 32.5 | 32.5 | 30.5 | | |
| Effective Green, g (s) | 32.0 | 32.0 | 32.0 | 32.0 | 30.0 | | |
| Actuated g/C Ratio | 0.46 | 0.46 | 0.46 | 0.46 | 0.43 | | |
| Clearance Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | |
| Lane Grp Cap (vph) | 768 | 762 | 688 | 724 | 2113 | | |
| v/s Ratio Prot | | | | | c0.14 | | |
| v/s Ratio Perm | 0.03 | 0.11 | 0.09 | 0.02 | | | |
| v/c Ratio | 0.07 | 0.24 | 0.20 | 0.05 | 0.32 | | |
| Uniform Delay, d1 | 10.6 | 11.6 | 11.4 | 10.5 | 13.2 | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Incremental Delay, d2 | 0.2 | 0.7 | 0.7 | 0.1 | 0.4 | | |
| Delay (s) | 10.8 | 12.3 | 12.1 | 10.7 | 13.6 | | |
| Level of Service | B | B | B | B | B | | |
| Approach Delay (s) | | 11.7 | | | 13.6 | | |
| Approach LOS | | B | | | B | | |

Intersection Summary

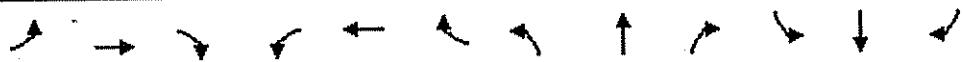
| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 12.8 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.28 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 29.4% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Capitol Mall & 3rd St

12/13/2006



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|-------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↑↑ | | ↑ | ↑↑ | | | | | ↑↑↑ | | |
| Volume (vph) | 0 | 638 | 0 | 91 | 129 | 0 | 0 | 0 | 0 | 189 | 462 | 6 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | | | 4.0 | 4.0 | | | | | | 5.5 | |
| Lane Util. Factor | 0.91 | | | 1.00 | 0.95 | | | | | | 0.91 | |
| Fr _t | 1.00 | | | 1.00 | 1.00 | | | | | | 1.00 | |
| Flt Protected | 1.00 | | | 0.95 | 1.00 | | | | | | 0.99 | |
| Satd. Flow (prot) | 5085 | | | 1770 | 3539 | | | | | | 5006 | |
| Flt Permitted | | | | 1.00 | 0.35 | 1.00 | | | | | 0.99 | |
| Satd. Flow (perm) | 5085 | | | 647 | 3539 | | | | | | 5006 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 0 | 638 | 0 | 91 | 129 | 0 | 0 | 0 | 0 | 189 | 462 | 6 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| Lane Group Flow (vph) | 0 | 638 | 0 | 91 | 129 | 0 | 0 | 0 | 0 | 0 | 655 | 0 |
| Turn Type | | | pm+pt | | | | | | | | Perm | |
| Protected Phases | 6 | | 5 | 2 | | | | | | | | 4 |
| Permitted Phases | | | 2 | | | | | | | | | 4 |
| Actuated Green, G (s) | 36.3 | | 47.8 | 47.8 | | | | | | | | 13.7 |
| Effective Green, g (s) | 35.8 | | 47.3 | 47.3 | | | | | | | | 13.2 |
| Actuated g/C Ratio | 0.51 | | 0.68 | 0.68 | | | | | | | | 0.19 |
| Clearance Time (s) | 3.5 | | 3.5 | 3.5 | | | | | | | | 5.0 |
| Vehicle Extension (s) | 2.0 | | 2.0 | 2.0 | | | | | | | | 2.0 |
| Lane Grp Cap (vph) | 2601 | | 558 | 2391 | | | | | | | | 944 |
| v/s Ratio Prot | c0.13 | | c0.02 | 0.04 | | | | | | | | 0.13 |
| v/s Ratio Perm | | | 0.09 | | | | | | | | | 0.69 |
| v/c Ratio | 0.25 | | 0.16 | 0.05 | | | | | | | | 26.5 |
| Uniform Delay, d1 | 9.6 | | 4.1 | 3.8 | | | | | | | | 1.15 |
| Progression Factor | 1.00 | | 1.00 | 1.00 | | | | | | | | 1.8 |
| Incremental Delay, d2 | 0.0 | | 0.1 | 0.0 | | | | | | | | 32.2 |
| Delay (s) | 9.6 | | 4.1 | 3.9 | | | | | | | | C |
| Level of Service | A | | A | A | | | | | | | | C |
| Approach Delay (s) | 9.6 | | | 4.0 | | | | 0.0 | | | | 32.2 |
| Approach LOS | A | | | A | | | | A | | | | C |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 18.6 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.34 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 13.5 |
| Intersection Capacity Utilization | 44.8% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

3: N St & 3rd St

12/13/2006



| Movement | EBT | EBR | SBL | SBT | SEL | SER |
|------------------------|------|------|------|------|-------|------|
| Lane Configurations | ↑ | | | ↑↑↑ | ↑↑ | |
| Volume (vph) | 60 | 4 | 362 | 267 | 318 | 122 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | | | 3.5 | 3.5 | |
| Lane Util. Factor | 1.00 | | | 0.91 | 0.97 | |
| Frt | 0.99 | | | 1.00 | 0.96 | |
| Flt Protected | 1.00 | | | 0.97 | 0.97 | |
| Satd. Flow (prot) | 1847 | | | 4943 | 3343 | |
| Flt Permitted | 1.00 | | | 0.97 | 0.97 | |
| Satd. Flow (perm) | 1847 | | | 4943 | 3343 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 60 | 4 | 362 | 267 | 318 | 122 |
| RTOR Reduction (vph) | 3 | 0 | 0 | 209 | 0 | 0 |
| Lane Group Flow (vph) | 61 | 0 | 0 | 420 | 440 | 0 |
| Turn Type | | | Perm | | | |
| Protected Phases | 6 | | | 2 | 5 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 12.5 | | | 29.5 | 17.5 | |
| Effective Green, g (s) | 12.5 | | | 29.5 | 17.5 | |
| Actuated g/C Ratio | 0.18 | | | 0.42 | 0.25 | |
| Clearance Time (s) | 3.5 | | | 3.5 | 3.5 | |
| Lane Grp Cap (vph) | 330 | | | 2083 | 836 | |
| v/s Ratio Prot | 0.03 | | | | c0.13 | |
| v/s Ratio Perm | | | | 0.08 | | |
| v/c Ratio | 0.18 | | | 0.20 | 0.53 | |
| Uniform Delay, d1 | 24.4 | | | 12.8 | 22.7 | |
| Progression Factor | 1.00 | | | 0.77 | 1.00 | |
| Incremental Delay, d2 | 1.2 | | | 0.2 | 2.4 | |
| Delay (s) | 25.6 | | | 10.0 | 25.0 | |
| Level of Service | C | | | B | C | |
| Approach Delay (s) | 25.6 | | | 10.0 | 25.0 | |
| Approach LOS | C | | | B | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 16.7 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.29 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 10.5 |
| Intersection Capacity Utilization | 51.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis
1: L St & 3rd St

12/13/2006



| Movement | WBL | WBT | WBR | WBR2 | SBT | SBR | SBR2 |
|----------------------------|------|------|------|------|-------|------|------|
| Lane Configurations | | | | | | | |
| Volume (vph) | 360 | 455 | 898 | 99 | 445 | 254 | 52 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | |
| Lane Util. Factor | 0.95 | 0.91 | 0.95 | 1.00 | 0.91 | | |
| Frt | 1.00 | 0.95 | 0.85 | 0.85 | 0.94 | | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Satd. Flow (prot) | 1681 | 1607 | 1504 | 1583 | 4774 | | |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Satd. Flow (perm) | 1681 | 1607 | 1504 | 1583 | 4774 | | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 360 | 455 | 898 | 99 | 445 | 254 | 52 |
| RTOR Reduction (vph) | 28 | 3 | 0 | 34 | 12 | 0 | 0 |
| Lane Group Flow (vph) | 296 | 730 | 656 | 65 | 739 | 0 | 0 |
| Turn Type | Perm | | Perm | Perm | | | |
| Protected Phases | | 2 | | | 4 | | |
| Permitted Phases | 2 | | 2 | 2 | | | |
| Actuated Green, G (s) | 46.5 | 46.5 | 46.5 | 46.5 | 16.5 | | |
| Effective Green, g (s) | 46.0 | 46.0 | 46.0 | 46.0 | 16.0 | | |
| Actuated g/C Ratio | 0.66 | 0.66 | 0.66 | 0.66 | 0.23 | | |
| Clearance Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | |
| Lane Grp Cap (vph) | 1105 | 1056 | 988 | 1040 | 1091 | | |
| v/s Ratio Prot | | | | | c0.15 | | |
| v/s Ratio Perm | 0.18 | 0.45 | 0.44 | 0.04 | | | |
| v/c Ratio | 0.27 | 0.69 | 0.66 | 0.06 | 0.68 | | |
| Uniform Delay, d1 | 5.0 | 7.5 | 7.3 | 4.3 | 24.6 | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | |
| Incremental Delay, d2 | 0.6 | 3.7 | 3.5 | 0.1 | 3.4 | | |
| Delay (s) | 5.6 | 11.3 | 10.8 | 4.4 | 28.0 | | |
| Level of Service | A | B | B | A | C | | |
| Approach Delay (s) | | 9.7 | | | 28.0 | | |
| Approach LOS | | A | | | C | | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|----|
| HCM Average Control Delay | 15.1 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.69 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 80 |
| Intersection Capacity Utilization | 59.2% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: Capitol Mall & 3rd St

12/13/2006



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|-------|-------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↑↑↑ | | ↑↑ | | | | | | ↑↑↑ | | |
| Volume (vph) | 0 | 466 | 0 | 167 | 467 | 0 | 0 | 0 | 0 | 43 | 760 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 4.0 | | 4.0 | 4.0 | | | | | | 5.5 | |
| Lane Util. Factor | | 0.91 | | 1.00 | 0.95 | | | | | | 0.91 | |
| Frt | | 1.00 | | 1.00 | 1.00 | | | | | | 1.00 | |
| Flt Protected | | 1.00 | | 0.95 | 1.00 | | | | | | 1.00 | |
| Sald. Flow (prot) | | 5085 | | 1770 | 3539 | | | | | | 5072 | |
| Flt Permitted | | 1.00 | | 0.42 | 1.00 | | | | | | 1.00 | |
| Sald. Flow (perm) | | 5085 | | 784 | 3539 | | | | | | 5072 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 0 | 466 | 0 | 167 | 467 | 0 | 0 | 0 | 0 | 43 | 760 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 0 | 466 | 0 | 167 | 467 | 0 | 0 | 0 | 0 | 0 | 803 | 0 |
| Turn Type | | | | pm+pt | | | | | | Perm | | |
| Protected Phases | | 6 | | 5 | 2 | | | | | | 4 | |
| Permitted Phases | | | | 2 | | | | | | | 4 | |
| Actuated Green, G (s) | | 32.0 | | 45.5 | 45.5 | | | | | | 16.0 | |
| Effective Green, g (s) | | 31.5 | | 45.0 | 45.0 | | | | | | 15.5 | |
| Actuated g/C Ratio | | 0.45 | | 0.64 | 0.64 | | | | | | 0.22 | |
| Clearance Time (s) | | 3.5 | | 3.5 | 3.5 | | | | | | 5.0 | |
| Vehicle Extension (s) | | 2.0 | | 2.0 | 2.0 | | | | | | 2.0 | |
| Lane Grp Cap (vph) | 2288 | | 638 | 2275 | | | | | | | 1123 | |
| v/s Ratio Prot | 0.09 | | c0.04 | 0.13 | | | | | | | | |
| v/s Ratio Perm | | | c0.13 | | | | | | | | 0.16 | |
| v/c Ratio | 0.20 | | 0.26 | 0.21 | | | | | | | 0.72 | |
| Uniform Delay, d1 | 11.7 | | 5.1 | 5.1 | | | | | | | 25.2 | |
| Progression Factor | 1.00 | | 1.00 | 1.00 | | | | | | | 1.52 | |
| Incremental Delay, d2 | 0.0 | | 0.1 | 0.2 | | | | | | | 1.6 | |
| Delay (s) | 11.7 | | 5.2 | 5.3 | | | | | | | 39.8 | |
| Level of Service | B | | A | A | | | | | | | D | |
| Approach Delay (s) | 11.7 | | | 5.3 | | | | 0.0 | | | 39.8 | |
| Approach LOS | B | | | A | | | | A | | | D | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 21.4 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.37 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 9.5 |
| Intersection Capacity Utilization | 45.1% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

3: N St & 3rd St

12/13/2006



| Movement | EBT | EBR | SBL | SBT | SEL | SER |
|------------------------|-------|------|------|-------|------|------|
| Lane Configurations | ↑ | | | ↑↑↑ | ↑↑ | |
| Volume (vph) | 79 | 25 | 128 | 898 | 129 | 184 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | | | 3.5 | 3.5 | |
| Lane Util. Factor | 1.00 | | | 0.91 | 0.97 | |
| Frt | 0.97 | | | 1.00 | 0.91 | |
| Flt_Protected | 1.00 | | | 0.99 | 0.98 | |
| Satd. Flow (prot) | 1802 | | | 5054 | 3229 | |
| Flt Permitted | 1.00 | | | 0.99 | 0.98 | |
| Satd. Flow (perm) | 1802 | | | 5054 | 3229 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 79 | 25 | 128 | 898 | 129 | 184 |
| RTOR Reduction (vph) | 16 | 0 | 0 | 27 | 0 | 0 |
| Lane Group Flow (vph) | 88 | 0 | 0 | 999 | 313 | 0 |
| Turn Type | | | | Perm | | |
| Protected Phases | 6 | | | 2 | 5 | |
| Permitted Phases | | | | 2 | | |
| Actuated Green, G (s) | 12.5 | | | 32.5 | 14.5 | |
| Effective Green, g (s) | 12.5 | | | 32.5 | 14.5 | |
| Actuated g/C Ratio | 0.18 | | | 0.46 | 0.21 | |
| Clearance Time (s) | 3.5 | | | 3.5 | 3.5 | |
| Lane Grp Cap (vph) | 322 | | | 2347 | 669 | |
| v/s Ratio Prot | c0.05 | | | c0.10 | | |
| v/s Ratio Perm | | | | 0.20 | | |
| v/c Ratio | 0.27 | | | 0.43 | 0.47 | |
| Uniform Delay, d1 | 24.8 | | | 12.5 | 24.4 | |
| Progression Factor | 1.00 | | | 0.19 | 1.00 | |
| Incremental Delay, d2 | 2.1 | | | 0.5 | 2.3 | |
| Delay (s) | 26.9 | | | 2.9 | 26.7 | |
| Level of Service | C | | | A | C | |
| Approach Delay (s) | 26.9 | | | 2.9 | 26.7 | |
| Approach LOS | C | | | A | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 9.8 | HCM Level of Service | A |
| HCM Volume to Capacity ratio | 0.40 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 10.5 |
| Intersection Capacity Utilization | 47.8% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

1: L-St & 3rd St

1/11/2007



| Movement | WBL | WBT | WBR | WBR2 | NBL | NBT | SBT | SBR | SBR2 |
|-----------------------------------|------|------|------|------|-------|------|-------|------|------|
| Lane Configurations | ↑ ↗ | ↖ ↗ | ↗ ↘ | ↖ ↘ | ↑ ↗ | ↑ ↘ | ↑↑↑ | ↗ ↗ | ↖ ↗ |
| Volume (vph) | 182 | 190 | 191 | 45 | 43 | 30 | 648 | 129 | 9 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 0.95 | 0.91 | 0.95 | 1.00 | 1.00 | 1.00 | 0.91 | 0.91 | 0.91 |
| Fr _t | 1.00 | 0.99 | 0.85 | 0.85 | 1.00 | 1.00 | 0.97 | 0.97 | 0.97 |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 |
| Satd. Flow (prot) | 1681 | 1667 | 1504 | 1583 | 1770 | 1863 | 4951 | 4951 | 4951 |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | 1.00 | 1.00 |
| Satd. Flow (perm) | 1681 | 1667 | 1504 | 1583 | 1770 | 1863 | 4951 | 4951 | 4951 |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 182 | 190 | 191 | 45 | 43 | 30 | 648 | 129 | 9 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 31 | 0 | 0 | 2 | 0 | 0 |
| Lane Group Flow (vph) | 164 | 227 | 172 | 14 | 43 | 30 | 784 | 0 | 0 |
| Turn Type | Perm | | Perm | Perm | Prot | | | | |
| Protected Phases | | 2 | | | 3 | 8 | 4 | | |
| Permitted Phases | 2 | | 2 | 2 | | | | | |
| Actuated Green, G (s) | 22.5 | 22.5 | 22.5 | 22.5 | 6.0 | 40.0 | 30.5 | | |
| Effective Green, g (s) | 22.0 | 22.0 | 22.0 | 22.0 | 6.0 | 40.0 | 30.0 | | |
| Actuated g/C Ratio | 0.31 | 0.31 | 0.31 | 0.31 | 0.09 | 0.57 | 0.43 | | |
| Clearance Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 4.0 | 4.0 | 3.5 | | |
| Lane Grp Cap (vph) | 528 | 524 | 473 | 498 | 152 | 1065 | 2122 | | |
| v/s Ratio Prot | | | | | c0.02 | 0.02 | c0.16 | | |
| v/s Ratio Perm | 0.10 | 0.14 | 0.11 | 0.01 | | | | | |
| v/c Ratio | 0.31 | 0.43 | 0.36 | 0.03 | 0.28 | 0.03 | 0.37 | | |
| Uniform Delay, d ₁ | 18.2 | 19.1 | 18.6 | 16.6 | 30.0 | 6.5 | 13.6 | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 0.74 | 2.79 | 1.00 | | |
| Incremental Delay, d ₂ | 1.5 | 2.6 | 2.2 | 0.1 | 4.6 | 0.0 | 0.5 | | |
| Delay (s) | 19.8 | 21.6 | 20.7 | 16.7 | 26.7 | 18.3 | 14.1 | | |
| Level of Service | B | C | C | B | C | B | B | | |
| Approach Delay (s) | 20.5 | | | | 23.2 | 14.1 | | | |
| Approach LOS | | C | | | C | B | | | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 17.2 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.38 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 40.9% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2. Capitol Mall & 3rd St

1/11/2007

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|-------|-------|------|-------|----------------------|------|------|------|------|------|------|------|
| Lane Configurations | x | ↑↑↑ | | x | ↑↑ | | | | | ↑↑↑ | | x |
| Volume (vph) | 66 | 809 | 0 | 124 | 164 | 33 | 0 | 0 | 0 | 320 | 529 | 68 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | 4.0 | | 4.0 | 4.0 | | | | | | 5.5 | 5.0 |
| Lane Util. Factor | 1.00 | 0.91 | | 1.00 | 0.95 | | | | | | 0.86 | 0.86 |
| Frt | 1.00 | 1.00 | | 1.00 | 0.97 | | | | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | | | | 0.98 | 1.00 |
| Satd. Flow (prot) | 1770 | 5085 | | 1770 | 3450 | | | | | | 4712 | 1362 |
| Flt Permitted | 0.95 | 1.00 | | 0.28 | 1.00 | | | | | | 0.98 | 1.00 |
| Satd. Flow (perm) | 1770 | 5085 | | 515 | 3450 | | | | | | 4712 | 1362 |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 66 | 809 | 0 | 124 | 164 | 33 | 0 | 0 | 0 | 320 | 529 | 68 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 2 | 46 |
| Lane Group Flow (vph) | 66 | 809 | 0 | 124 | 180 | 0 | 0 | 0 | 0 | 0 | 854 | 15 |
| Turn Type | Prot | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | 1 | 6 | | 5 | 2 | | | | | | 4 | |
| Permitted Phases | | | | 2 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | 5.6 | 32.3 | | 42.7 | 34.7 | | | | | | 17.7 | 17.7 |
| Effective Green, g (s) | 5.6 | 31.8 | | 41.7 | 34.2 | | | | | | 17.2 | 17.7 |
| Actuated g/C Ratio | 0.08 | 0.45 | | 0.60 | 0.49 | | | | | | 0.25 | 0.25 |
| Clearance Time (s) | 3.5 | 3.5 | | 3.5 | 3.5 | | | | | | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 2.0 | | 2.0 | 2.0 | | | | | | 2.0 | 2.0 |
| Lane Grp Cap (vph) | 142 | 2310 | | 441 | 1686 | | | | | | 1158 | 344 |
| v/s Ratio Prot | c0.04 | c0.16 | | c0.03 | 0.05 | | | | | | 0.18 | 0.01 |
| v/s Ratio Perm | | | | 0.14 | | | | | | | 0.74 | 0.04 |
| v/c Ratio | 0.46 | 0.35 | | 0.28 | 0.11 | | | | | | 24.3 | 19.8 |
| Uniform Delay, d1 | 30.8 | 12.4 | | 6.5 | 9.7 | | | | | | 0.77 | 0.48 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | | | | 2.1 | 0.0 |
| Incremental Delay, d2 | 2.4 | 0.0 | | 0.1 | 0.1 | | | | | | 20.7 | 9.5 |
| Delay (s) | 33.2 | 12.4 | | 6.6 | 9.8 | | | | | | | |
| Level of Service | C | B | | A | A | | | | | | C | A |
| Approach Delay (s) | | 14.0 | | | 8.6 | | | 0.0 | | | 20.0 | |
| Approach LOS | | B | | | A | | | A | | | B | |
| Intersection Summary: | | | | | | | | | | | | |
| HCM Average Control Delay | | 15.8 | | | HCM Level of Service | | | | | B | | |
| HCM Volume to Capacity ratio | | 0.50 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 70.0 | | | Sum of lost time (s) | | | 17.0 | | | | |
| Intersection Capacity Utilization | | 52.9% | | | ICU Level of Service | | | A | | | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c - Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis
3: N St & 3rd St

1/11/2007



| Movement | EBT | EBR | SBL | SBT | SEL | SER |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | ↑ | | ↑↑↑ | ↑↑↑ | | |
| Volume (vph) | 60 | 4 | 371 | 358 | 334 | 123 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | | | 3.5 | 3.5 | |
| Lane Util Factor | 1.00 | | | 0.91 | 0.97 | |
| Frt | 0.99 | | | 1.00 | 0.96 | |
| Flt Protected | 1.00 | | | 0.98 | 0.96 | |
| Satd. Flow (prot) | 1847 | | | 4959 | 3346 | |
| Flt Permitted | 1.00 | | | 0.98 | 0.96 | |
| Satd. Flow (perm) | 1847 | | | 4959 | 3346 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 60 | 4 | 371 | 358 | 334 | 123 |
| RTOR Reduction (vph) | 3 | 0 | 0 | 215 | 0 | 0 |
| Lane Group Flow (vph) | 61 | 0 | 0 | 514 | 457 | 0 |
| Turn Type | | | Perm | | | |
| Protected Phases | 6 | | | 2 | 5 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 12.5 | | | 29.5 | 17.5 | |
| Effective Green, g (s) | 12.5 | | | 29.5 | 17.5 | |
| Actuated g/C Ratio | 0.18 | | | 0.42 | 0.25 | |
| Clearance Time (s) | 3.5 | | | 3.5 | 3.5 | |
| Lane Grp Cap (vph) | 330 | | | 2090 | 837 | |
| v/s Ratio Prot | 0.03 | | | | 0.14 | |
| v/s Ratio Perm | | | | 0.10 | | |
| v/c Ratio | 0.18 | | | 0.25 | 0.55 | |
| Uniform Delay, d1 | 24.4 | | | 13.1 | 22.8 | |
| Progression Factor | 1.00 | | | 0.46 | 1.00 | |
| Incremental Delay, d2 | 1.2 | | | 0.3 | 2.6 | |
| Delay (s) | 25.6 | | | 6.3 | 25.4 | |
| Level of Service | C | | | A | C | |
| Approach Delay (s) | 25.6 | | | 6.3 | 25.4 | |
| Approach LOS | C | | | A | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 14.3 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.32 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 10.5 |
| Intersection Capacity Utilization | 52.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

1: L St & 3rd St

1/11/2007

| Movement | WBL | WBT | WBR | WBR2 | NBL | NBT | SBT | SBR | SBR2 |
|-----------------------------------|------|-------|------|------|----------------------|------|-------|------|------|
| Lane Configurations | ↗ | ↔ | ↑ | ↗ | ↑ | ↗ | ↑↑↑ | | |
| Volume (vph) | 443 | 502 | 990 | 29 | 82 | 70 | 534 | 254 | 52 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | | |
| Lane Util. Factor | 0.95 | 0.91 | 0.95 | 1.00 | 1.00 | 1.00 | 0.91 | | |
| Frt | 1.00 | 0.95 | 0.85 | 0.85 | 1.00 | 1.00 | 0.95 | | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | |
| Satd. Flow (prot) | 1681 | 1607 | 1504 | 1583 | 1770 | 1863 | 4807 | | |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | |
| Satd. Flow (perm) | 1681 | 1607 | 1504 | 1583 | 1770 | 1863 | 4807 | | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Adj. Flow (vph) | 443 | 502 | 990 | 29 | 82 | 70 | 534 | 254 | 52 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 14 | 0 | 0 | 11 | 0 | 0 |
| Lane Group Flow (vph) | 399 | 813 | 723 | 15 | 82 | 70 | 829 | 0 | 0 |
| Turn Type | Perm | | Perm | Perm | Prot | | | | |
| Protected Phases | | 2 | | | 3 | 8 | 4 | | |
| Permitted Phases | 2 | | 2 | 2 | | | | | |
| Actuated Green, G (s) | 36.5 | 36.5 | 36.5 | 36.5 | 6.0 | 26.0 | 16.5 | | |
| Effective Green, g (s) | 36.0 | 36.0 | 36.0 | 36.0 | 6.0 | 26.0 | 16.0 | | |
| Actuated g/C Ratio | 0.51 | 0.51 | 0.51 | 0.51 | 0.09 | 0.37 | 0.23 | | |
| Clearance Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 4.0 | 4.0 | 3.5 | | |
| Lane Grp Cap (vph) | 865 | 826 | 773 | 814 | 152 | 692 | 1099 | | |
| v/s Ratio Prot | | | | | c0.05 | 0.04 | c0.17 | | |
| v/s Ratio Perm | 0.24 | 0.51 | 0.48 | 0.01 | | | | | |
| v/c Ratio | 0.46 | 0.98 | 0.94 | 0.02 | 0.54 | 0.10 | 0.75 | | |
| Uniform Delay, d1 | 10.8 | 16.7 | 15.9 | 8.3 | 30.7 | 14.4 | 25.2 | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 0.74 | 1.50 | 1.00 | | |
| Incremental Delay, d2 | 1.8 | 27.7 | 20.0 | 0.0 | 10.7 | 0.2 | 4.8 | | |
| Delay (s) | 12.6 | 44.4 | 35.9 | 8.4 | 33.4 | 21.8 | 30.0 | | |
| Level of Service | B | D | D | A | C | C | C | | |
| Approach Delay (s) | | 34.3 | | | | 28.1 | 30.0 | | |
| Approach LOS | | C | | | | C | C | | |
| Intersection Summary | | | | | | | | | |
| HCM Average Control Delay | | 32.7 | | | HCM Level of Service | | C | | |
| HCM Volume to Capacity ratio | | 0.87 | | | | | | | |
| Actuated Cycle Length (s) | | 70.0 | | | Sum of lost time (s) | | 12.0 | | |
| Intersection Capacity Utilization | | 72.6% | | | ICU Level of Service | | C | | |
| Analysis Period (min) | | 15 | | | | | | | |
| c Critical Lane Group | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

2: Capitol Mall & 3rd St

1/11/2007

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|------|------|-------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↑↑↑ | | | ↑↑ | | | | | ↑↑↑ | | |
| Volume (vph) | 176 | 462 | 0 | 361 | 637 | 98 | 0 | 0 | 0 | 138 | 863 | 89 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | 4.0 | | 4.0 | 4.0 | | | | | | 5.5 | 5.0 |
| Lane Util. Factor | 1.00 | 0.91 | | 1.00 | 0.95 | | | | | | 0.86 | 0.86 |
| Frt | 1.00 | 1.00 | | 1.00 | 0.98 | | | | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | | | | 0.99 | 1.00 |
| Satd. Flow (prot) | 1770 | 5085 | | 1770 | 3468 | | | | | | 4767 | 1362 |
| Flt Permitted | 0.95 | 1.00 | | 0.43 | 1.00 | | | | | | 0.99 | 1.00 |
| Satd. Flow (perm) | 1770 | 5085 | | 803 | 3468 | | | | | | 4767 | 1362 |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 176 | 462 | 0 | 361 | 637 | 98 | 0 | 0 | 0 | 138 | 863 | 89 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 1 | 57 |
| Lane Group Flow (vph) | 176 | 462 | 0 | 361 | 719 | 0 | 0 | 0 | 0 | 0 | 1009 | 23 |
| Turn Type | Prot | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | 1 | 6 | | 5 | 2 | | | | | | 4 | |
| Permitted Phases | | | | 2 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | 10.7 | 25.5 | | 40.0 | 27.4 | | | | | | 19.9 | 19.9 |
| Effective Green, g (s) | 10.7 | 25.0 | | 39.0 | 26.9 | | | | | | 19.4 | 19.9 |
| Actuated g/C Ratio | 0.15 | 0.36 | | 0.56 | 0.38 | | | | | | 0.28 | 0.28 |
| Clearance Time (s) | 3.5 | 3.5 | | 3.5 | 3.5 | | | | | | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 2.0 | | 2.0 | 2.0 | | | | | | 2.0 | 2.0 |
| Lane Grp Cap (vph) | 271 | 1816 | | 615 | 1333 | | | | | | 1321 | 387 |
| v/s Ratio Prot | c0.10 | 0.09 | | c0.10 | 0.21 | | | | | | 0.21 | 0.02 |
| v/s Ratio Perm | | | | c0.23 | | | | | | | 0.76 | 0.06 |
| v/c Ratio | 0.65 | 0.25 | | 0.59 | 0.54 | | | | | | 23.2 | 18.2 |
| Uniform Delay, d1 | 27.9 | 15.9 | | 8.7 | 16.7 | | | | | | 1.45 | 2.42 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | | | | 2.0 | 0.0 |
| Incremental Delay, d2 | 5.3 | 0.0 | | 0.9 | 1.6 | | | | | | 35.6 | 44.2 |
| Delay (s) | 33.2 | 15.9 | | 9.6 | 18.3 | | | | | | D | D |
| Level of Service | C | B | | A | B | | | | | | 36.2 | |
| Approach Delay (s) | | 20.7 | | | 15.4 | | | 0.0 | | | | |
| Approach LOS | | C | | | B | | | A | | | D | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 24.7 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.66 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 13.0 |
| Intersection Capacity Utilization | 61.9% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: N St & 3rd St

1/11/2007



| Movement | EBT | EBR | SBL | SBT | SEL | SER |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | ↑ | | | ↑↑↑ | ↑↑↑ | |
| Volume (vph) | 79 | 25 | 149 | 1183 | 138 | 193 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | | | 3.5 | 3.5 | |
| Lane Util. Factor | 1.00 | | | 0.91 | 0.97 | |
| Frt | 0.97 | | | 1.00 | 0.91 | |
| Flt Protected | 1.00 | | | 0.99 | 0.98 | |
| Satd. Flow (prot) | 1802 | | | 5057 | 3230 | |
| Flt Permitted | 1.00 | | | 0.99 | 0.98 | |
| Satd. Flow (perm) | 1802 | | | 5057 | 3230 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 79 | 25 | 149 | 1183 | 138 | 193 |
| RTOR Reduction (vph) | 16 | 0 | 0 | 23 | 0 | 0 |
| Lane Group Flow (vph) | 88 | 0 | 0 | 1310 | 331 | 0 |
| Turn Type | | | | Perm | | |
| Protected Phases | 6 | | | 2 | 5 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 12.5 | | | 32.5 | 14.5 | |
| Effective Green, g (s) | 12.5 | | | 32.5 | 14.5 | |
| Actuated g/C Ratio | 0.18 | | | 0.46 | 0.21 | |
| Clearance Time (s) | 3.5 | | | 3.5 | 3.5 | |
| Lane Grp Cap (vph) | 322 | | | 2348 | 669 | |
| v/s Ratio Prot | 0.05 | | | 0.10 | | |
| v/s Ratio Perm | | | | 0.26 | | |
| v/c Ratio | 0.27 | | | 0.56 | 0.49 | |
| Uniform Delay, d1 | 24.8 | | | 13.6 | 24.5 | |
| Progression Factor | 1.00 | | | 0.47 | 1.00 | |
| Incremental Delay, d2 | 2.1 | | | 0.8 | 2.6 | |
| Delay (s) | 26.9 | | | 7.1 | 27.1 | |
| Level of Service | C | | | A | C | |
| Approach Delay (s) | 26.9 | | | 7.1 | 27.1 | |
| Approach LOS | C | | | A | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 12.0 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.48 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 10.5 |
| Intersection Capacity Utilization | 54.3% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

1: L St & 3rd St

1/11/2007



| Movement | WBL | WBR | WBR2 | NBL | NBT | NBR | SBL | SBT | SBR | SEL | SER |
|------------------------|--------|--------|------|-------|------|------|------|------|-------|------|------|
| Lane Configurations | YY | Y | Y | Y | ↑ | | ↑↑ | ↑↑ | 9 | 0 | 0 |
| Volume (vph) | 372 | 191 | 45 | 43 | 30 | 0 | 0 | 777 | 9 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.5 | 3.5 | | | | 4.0 | | |
| Lane Util. Factor | 0.97 | 0.91 | 1.00 | 1.00 | 1.00 | | | | 0.91 | | |
| Frt | 0.99 | 0.85 | 0.85 | 1.00 | 1.00 | | | | 1.00 | | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | | 1.00 | | |
| Satd. Flow (prot) | 3424 | 1441 | 1583 | 1770 | 1863 | | | | 5077 | | |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 0.95 | 1.00 | | | | 1.00 | | |
| Satd. Flow (perm) | 3424 | 1441 | 1583 | 1770 | 1863 | | | | 5077 | | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 372 | 191 | 45 | 43 | 30 | 0 | 0 | 777 | 9 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 391 | 172 | 14 | 43 | 30 | 0 | 0 | 784 | 0 | 0 | 0 |
| Turn Type | custom | custom | | Prot | | | | | 4 | | |
| Protected Phases | | | | | 3 | 8 | | | | | |
| Permitted Phases | 2 | 2 | 2 | | | | | | | | |
| Actuated Green, G (s) | 22.5 | 22.5 | 22.5 | 6.5 | 40.5 | | | | 30.5 | | |
| Effective Green, g (s) | 22.0 | 22.0 | 22.0 | 6.5 | 40.5 | | | | 30.0 | | |
| Actuated g/C Ratio | 0.31 | 0.31 | 0.31 | 0.09 | 0.58 | | | | 0.43 | | |
| Clearance Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | | | 3.5 | | |
| Lane Grp Cap (vph) | 1076 | 453 | 498 | 164 | 1078 | | | | 2176 | | |
| v/s Ratio Prot | | | | c0.02 | 0.02 | | | | c0.15 | | |
| v/s Ratio Perm | 0.11 | c0.12 | 0.01 | | | | | | | | |
| v/c Ratio | 0.36 | 0.38 | 0.03 | 0.26 | 0.03 | | | | 0.36 | | |
| Uniform Delay, d1 | 18.6 | 18.7 | 16.6 | 29.5 | 6.3 | | | | 13.5 | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 0.69 | 2.61 | | | | 1.00 | | |
| Incremental Delay, d2 | 1.0 | 2.4 | 0.1 | 3.8 | 0.0 | | | | 0.5 | | |
| Delay (s) | 19.5 | 21.1 | 16.7 | 24.1 | 16.6 | | | | 14.0 | | |
| Level of Service | B | C | B | C | B | | | | B | | |
| Approach Delay (s) | 19.8 | | | | 21.0 | | | | 14.0 | 0.0 | |
| Approach LOS | B | | | | C | | | | B | A | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 16.7 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.36 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 11.5 |
| Intersection Capacity Utilization | 41.2% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

2: Capitol Mall & 3rd St

1/11/2007

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|-----------------------------------|------|-------|------|-------|------|----------------------|------|------|------|------|------|------|
| Lane Configurations | ↑ | ↑↑↑ | | ↑ | ↑↑ | | | | | ↑↑↑ | ↑↑↑ | ↑ |
| Volume (vph) | 66 | 809 | 457 | 124 | 164 | 33 | 0 | 0 | 0 | 320 | 529 | 387 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | 4.0 | | 4.0 | 4.0 | | | | | | 5.5 | 5.0 |
| Lane Util. Factor | 1.00 | 0.91 | | 1.00 | 0.95 | | | | | | 0.86 | 0.86 |
| Frt | 1.00 | 0.95 | | 1.00 | 0.97 | | | | | | 0.98 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | | | | 0.98 | 1.00 |
| Satd. Flow (prot) | 1770 | 4810 | | 1770 | 3450 | | | | | | 4647 | 1362 |
| Flt Permitted | 0.95 | 1.00 | | 0.13 | 1.00 | | | | | | 0.98 | 1.00 |
| Satd. Flow (perm) | 1770 | 4810 | | 239 | 3450 | | | | | | 4647 | 1362 |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 66 | 809 | 457 | 124 | 164 | 33 | 0 | 0 | 0 | 320 | 529 | 387 |
| RTOR Reduction (vph) | 0 | 120 | 0 | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 23 | 201 |
| Lane Group Flow (vph) | 66 | 1146 | 0 | 124 | 179 | 0 | 0 | 0 | 0 | 0 | 934 | 78 |
| Turn Type | Prot | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | 1 | 6 | | 5 | 2 | | | | | 4 | | 4 |
| Permitted Phases | | | | 2 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | 5.5 | 30.4 | | 40.9 | 32.9 | | | | | | 19.6 | 19.6 |
| Effective Green, g (s) | 5.5 | 29.9 | | 39.9 | 32.4 | | | | | | 19.1 | 19.6 |
| Actuated g/C Ratio | 0.08 | 0.43 | | 0.57 | 0.46 | | | | | | 0.27 | 0.28 |
| Clearance Time (s) | 3.5 | 3.5 | | 3.5 | 3.5 | | | | | | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 2.0 | | 2.0 | 2.0 | | | | | | 2.0 | 2.0 |
| Lane Grp Cap (vph) | 139 | 2055 | | 300 | 1597 | | | | | | 1268 | 381 |
| v/s Ratio Prot | 0.04 | c0.24 | | c0.04 | 0.05 | | | | | | 0.20 | 0.06 |
| v/s Ratio Perm | | | | 0.19 | | | | | | | 0.74 | 0.21 |
| v/c Ratio | 0.47 | 0.56 | | 0.41 | 0.11 | | | | | | 23.2 | 19.2 |
| Uniform Delay, d1 | 30.9 | 15.1 | | 8.6 | 10.7 | | | | | | 0.74 | 0.80 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | | | | 1.9 | 0.1 |
| Incremental Delay, d2 | 2.5 | 0.2 | | 0.3 | 0.1 | | | | | | 19.0 | 15.5 |
| Delay (s) | 33.4 | 15.3 | | 8.9 | 10.8 | | | | | | B | B |
| Level of Service | C | B | | A | B | | | | | | | |
| Approach Delay (s) | | 16.2 | | | 10.1 | | | | 0.0 | | 18.2 | |
| Approach LOS | | B | | | B | | | | A | | B | |
| Intersection Summary | | | | | | | | | | | | |
| HCM Average Control Delay | | 16.4 | | | | HCM Level of Service | | | | B | | |
| HCM Volume to Capacity ratio | | 0.64 | | | | | | | | | | |
| Actuated Cycle Length (s) | | 70.0 | | | | Sum of lost time (s) | | | | 17.5 | | |
| Intersection Capacity Utilization | | 65.0% | | | | ICU Level of Service | | | | C | | |
| Analysis Period (min) | | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis
3: N St & 3rd St

1/11/2007

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|-------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | | ↑ | | | | | | | ↑↑↑ | | |
| Volume (vph) | 0 | 60 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 705 | 481 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | | 3.5 | | | | | | | | 3.5 | |
| Lane Util. Factor | | | 1.00 | | | | | | | | 0.91 | |
| Fit | | | 0.99 | | | | | | | | 1.00 | |
| Fit Protected | | | 1.00 | | | | | | | | 0.97 | |
| Satd. Flow (prot) | | | 1847 | | | | | | | | 4939 | |
| Fit Permitted | | | 1.00 | | | | | | | | 0.97 | |
| Satd. Flow (perm) | | | 1847 | | | | | | | | 4939 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 0 | 60 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 705 | 481 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 257 | 0 |
| Lane Group Flow (vph) | 0 | 61 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 929 | 0 |
| Turn Type | | | | | | | | | | Perm | | |
| Protected Phases | | | 6 | | | | | | | | 4 | |
| Permitted Phases | | | | | | | | | | | 4 | |
| Actuated Green, G (s) | | | 18.5 | | | | | | | | 44.5 | |
| Effective Green, g (s) | | | 18.5 | | | | | | | | 44.5 | |
| Actuated g/C Ratio | | | 0.26 | | | | | | | | 0.64 | |
| Clearance Time (s) | | | 3.5 | | | | | | | | 3.5 | |
| Lane Grp Cap (vph) | | | 488 | | | | | | | | 3140 | |
| v/s Ratio Prot | | | c0.03 | | | | | | | | 0.19 | |
| v/s Ratio Perm | | | | | | | | | | | 0.30 | |
| v/c Ratio | | | 0.13 | | | | | | | | 0.57 | |
| Uniform Delay, d1 | | | 19.6 | | | | | | | | 2.82 | |
| Progression Factor | | | 1.00 | | | | | | | | 0.2 | |
| Incremental Delay, d2 | | | 0.5 | | | | | | | | 16.3 | |
| Delay (s) | | | 20.1 | | | | | | | | B | |
| Level of Service | | | C | | | | | | | | | |
| Approach Delay (s) | | | 20.1 | | | 0.0 | | 0.0 | | | 16.3 | |
| Approach LOS | | | C | | | A | | A | | | B | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 16.5 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.25 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 7.0 |
| Intersection Capacity Utilization | 54.1% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1: L St & 3rd St

1/11/2007

| Movement | WBL | WBR | WBR2 | NBL | NBT | NBR | SBL | SBT | SBR | SEL | SER |
|------------------------|--------|--------|------|-------|------|------|------|------|-------|------|------|
| Lane Configurations | | | | | | | | | | | |
| Volume (vph) | 945 | 990 | 29 | 82 | 70 | 0 | 0 | 788 | 52 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.5 | 3.5 | | | | 4.0 | | |
| Lane Util. Factor | 0.97 | 0.91 | 1.00 | 1.00 | 1.00 | | | | 0.91 | | |
| Frt | 0.96 | 0.85 | 0.85 | 1.00 | 1.00 | | | | 0.99 | | |
| Flt Protected | 0.97 | 1.00 | 1.00 | 0.95 | 1.00 | | | | 1.00 | | |
| Satd. Flow (prot) | 3340 | 1441 | 1583 | 1770 | 1863 | | | | 5038 | | |
| Flt Permitted | 0.97 | 1.00 | 1.00 | 0.95 | 1.00 | | | | 1.00 | | |
| Satd. Flow (perm) | 3340 | 1441 | 1583 | 1770 | 1863 | | | | 5038 | | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 945 | 990 | 29 | 82 | 70 | 0 | 0 | 788 | 52 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 14 | 0 | 0 | 0 | 0 | 11 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1321 | 614 | 15 | 82 | 70 | 0 | 0 | 829 | 0 | 0 | 0 |
| Turn Type | custom | custom | | Prot | | | | | | | |
| Protected Phases | | | | 3 | 8 | | | | 4 | | |
| Permitted Phases | 2 | 2 | 2 | | | | | | | | |
| Actuated Green, G (s) | 36.5 | 36.5 | 36.5 | 6.5 | 26.5 | | | | 16.5 | | |
| Effective Green, g (s) | 36.0 | 36.0 | 36.0 | 6.5 | 26.5 | | | | 16.0 | | |
| Actuated g/C Ratio | 0.51 | 0.51 | 0.51 | 0.09 | 0.38 | | | | 0.23 | | |
| Clearance Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | | | 3.5 | | |
| Lane Grp Cap (vph) | 1718 | 741 | 814 | 164 | 705 | | | | 1152 | | |
| v/s Ratio Prot | | | | c0.05 | 0.04 | | | | c0.16 | | |
| v/s Ratio Perm | 0.40 | c0.43 | 0.01 | | | | | | | | |
| v/c Ratio | 0.77 | 0.83 | 0.02 | 0.50 | 0.10 | | | | 0.72 | | |
| Uniform Delay, d1 | 13.7 | 14.4 | 8.3 | 30.2 | 14.0 | | | | 24.9 | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 0.70 | 1.44 | | | | 1.00 | | |
| Incremental Delay, d2 | 3.4 | 10.4 | 0.0 | 8.1 | 0.2 | | | | 3.9 | | |
| Delay (s) | 17.0 | 24.7 | 8.4 | 29.1 | 20.4 | | | | 28.8 | | |
| Level of Service | B | C | A | C | C | | | | C | | |
| Approach Delay (s) | 19.3 | | | | 25.1 | | | | 28.8 | 0.0 | |
| Approach LOS | B | | | | C | | | | C | A | |

| Intersection Summary | | | | | | | | | | | |
|-----------------------------------|-------|----------------------|--|--|--|--|--|--|------|---|--|
| HCM Average Control Delay | 22.3 | HCM Level of Service | | | | | | | | C | |
| HCM Volume to Capacity ratio | 0.76 | | | | | | | | | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | | | | | | | 11.5 | | |
| Intersection Capacity Utilization | 71.8% | ICU Level of Service | | | | | | | C | | |
| Analysis Period (min) | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis
2: Capitol Mall & 3rd St

1/11/2007



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|------|-------|------|------|------|------|------|------|------|------|
| Lane Configurations | | | | | | | | | | | | |
| Volume (vph) | 176 | 462 | 331 | 361 | 637 | 98 | 0 | 0 | 0 | 138 | 863 | 845 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | 4.0 | | 4.0 | 4.0 | | | | | | 5.5 | 5.0 |
| Lane Util. Factor | 1.00 | 0.91 | | 1.00 | 0.95 | | | | | | 0.86 | 0.86 |
| Frt | 1.00 | 0.94 | | 1.00 | 0.98 | | | | | | 0.96 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | | | | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 4767 | | 1770 | 3468 | | | | | | 4570 | 1362 |
| Flt Permitted | 0.95 | 1.00 | | 0.21 | 1.00 | | | | | | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 4767 | | 400 | 3468 | | | | | | 4570 | 1362 |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 176 | 462 | 331 | 361 | 637 | 98 | 0 | 0 | 0 | 138 | 863 | 845 |
| RTOR Reduction (vph) | 0 | 70 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 110 | 281 |
| Lane Group Flow (vph) | 176 | 723 | 0 | 361 | 718 | 0 | 0 | 0 | 0 | 0 | 1314 | 141 |
| Turn Type | Prot | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | 1 | 6 | | 5 | 2 | | | | | | 4 | |
| Permitted Phases | | | | 2 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | 10.0 | 21.2 | | 38.0 | 24.6 | | | | | | 23.4 | 23.4 |
| Effective Green, g (s) | 10.0 | 20.7 | | 37.0 | 24.1 | | | | | | 22.9 | 23.4 |
| Actuated g/C Ratio | 0.14 | 0.30 | | 0.53 | 0.34 | | | | | | 0.33 | 0.33 |
| Clearance Time (s) | 3.5 | 3.5 | | 3.5 | 3.5 | | | | | | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 2.0 | | 2.0 | 2.0 | | | | | | 2.0 | 2.0 |
| Lane Grp Cap (vph) | 253 | 1410 | | 464 | 1194 | | | | | | 1495 | 455 |
| v/s Ratio Prot | 0.10 | 0.15 | | c0.14 | 0.21 | | | | | | 0.29 | 0.10 |
| v/s Ratio Perm | | | | c0.27 | | | | | | | 0.88 | 0.31 |
| v/c Ratio | 0.70 | 0.51 | | 0.78 | 0.60 | | | | | | 22.2 | 17.3 |
| Uniform Delay, d1 | 28.6 | 20.5 | | 11.1 | 19.0 | | | | | | 1.19 | 2.32 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | | | | 4.3 | 0.1 |
| Incremental Delay, d2 | 8.0 | 0.1 | | 7.3 | 2.2 | | | | | | 30.9 | 40.3 |
| Delay (s) | 36.6 | 20.6 | | 18.4 | 21.2 | | | | | | C | D |
| Level of Service | D | C | | B | C | | | | | | | |
| Approach Delay (s) | | 23.5 | | | 20.3 | | | | 0.0 | | 33.0 | |
| Approach LOS | | C | | | C | | | | A | | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 27.1 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.86 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 13.5 |
| Intersection Capacity Utilization | 73.4% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

3: N St & 3rd St

1/11/2007

| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↑ | | | | | | | | ↑↑ | | |
| Volume (vph) | 0 | 79 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 287 | 1376 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 3.5 | | | | | | | | | 3.5 | |
| Lane Util. Factor | | 1.00 | | | | | | | | | 0.91 | |
| Frt | | 0.97 | | | | | | | | | 1.00 | |
| Flt Protected | | 1.00 | | | | | | | | | 0.99 | |
| Satd. Flow (prot) | | 1802 | | | | | | | | | 5042 | |
| Flt Permitted | | 1.00 | | | | | | | | | 0.99 | |
| Satd. Flow (perm) | | 1802 | | | | | | | | | 5042 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 0 | 79 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 287 | 1376 | 0 |
| RTOR Reduction (vph) | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 46 | 0 |
| Lane Group Flow (vph) | 0 | 88 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1617 | 0 |
| Turn Type | | | | | | | | | | Perm | | |
| Protected Phases | | 6 | | | | | | | | | 4 | |
| Permitted Phases | | | | | | | | | | | 4 | |
| Actuated Green, G (s) | | 18.5 | | | | | | | | | 44.5 | |
| Effective Green, g (s) | | 18.5 | | | | | | | | | 44.5 | |
| Actuated g/C Ratio | | 0.26 | | | | | | | | | 0.64 | |
| Clearance Time (s) | | 3.5 | | | | | | | | | 3.5 | |
| Lane Grp Cap (vph) | | 476 | | | | | | | | | 3205 | |
| v/s Ratio Prot | | c0.05 | | | | | | | | | 0.32 | |
| v/s Ratio Perm | | | | | | | | | | | 0.50 | |
| v/c Ratio | | 0.18 | | | | | | | | | 6.8 | |
| Uniform Delay, d1 | | 19.9 | | | | | | | | | 1.68 | |
| Progression Factor | | 1.00 | | | | | | | | | 0.4 | |
| Incremental Delay, d2 | | 0.9 | | | | | | | | | 11.9 | |
| Delay (s) | | 20.8 | | | | | | | | | B | |
| Level of Service | | C | | | | | | | | | | |
| Approach Delay (s) | | 20.8 | | | | 0.0 | | | 0.0 | | 11.9 | |
| Approach LOS | | C | | | | A | | | A | | B | |

| Intersection Summary | | |
|-----------------------------------|-------|----------------------|
| HCM Average Control Delay | 12.4 | HCM Level of Service |
| HCM Volume to Capacity ratio | 0.41 | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) |
| Intersection Capacity Utilization | 47.4% | ICU Level of Service |
| Analysis Period (min) | 15 | |
| c Critical Lane Group | | |

HCM Signalized Intersection Capacity Analysis

1: L St & 3rd St

1/11/2007



| Movement | WBL | WBT | WBR | WBR2 | NBL | NBT | SBT | SBR | SBR2 |
|------------------------|------|------|------|------|-------|------|-------|------|------|
| Lane Configurations | 193 | 244 | 246 | 45 | 43 | 30 | 944 | 291 | 21 |
| Volume (vph) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Ideal Flow (vphpl) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Total Lost time (s) | 0.95 | 0.91 | 0.95 | 1.00 | 1.00 | 1.00 | 0.91 | | |
| Lane Util. Factor | 1.00 | 0.99 | 0.85 | 0.85 | 1.00 | 1.00 | 0.96 | | |
| Frt | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | |
| Flt Protected | 1681 | 1668 | 1504 | 1583 | 1770 | 1863 | 4896 | | |
| Flt Permitted | 1.00 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | |
| Satd. Flow (prot) | 1681 | 1668 | 1504 | 1583 | 1770 | 1863 | 4896 | | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 193 | 244 | 246 | 45 | 43 | 30 | 944 | 291 | 21 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 31 | 0 | 0 | 2 | 0 | 0 |
| Lane Group Flow (vph) | 174 | 288 | 221 | 14 | 43 | 30 | 1254 | 0 | 0 |
| Turn Type | Perm | | Perm | Perm | Prot | | | | |
| Protected Phases | | 2 | | | 3 | 8 | 4 | | |
| Permitted Phases | 2 | | 2 | 2 | | | | | |
| Actuated Green, G (s) | 22.5 | 22.5 | 22.5 | 22.5 | 6.0 | 40.0 | 30.5 | | |
| Effective Green, g (s) | 22.0 | 22.0 | 22.0 | 22.0 | 6.0 | 40.0 | 30.0 | | |
| Actuated g/C Ratio | 0.31 | 0.31 | 0.31 | 0.31 | 0.09 | 0.57 | 0.43 | | |
| Clearance Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 4.0 | 4.0 | 3.5 | | |
| Lane Grp Cap (vph) | 528 | 524 | 473 | 498 | 152 | 1065 | 2098 | | |
| v/s Ratio Prot | | | | | c0.02 | 0.02 | c0.26 | | |
| v/s Ratio Perm | 0.10 | 0.17 | 0.15 | 0.01 | | | | | |
| v/c Ratio | 0.33 | 0.55 | 0.47 | 0.03 | 0.28 | 0.03 | 0.60 | | |
| Uniform Delay, d1 | 18.4 | 19.9 | 19.3 | 16.6 | 30.0 | 6.5 | 15.4 | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 0.64 | 2.35 | 1.00 | | |
| Incremental Delay, d2 | 1.7 | 4.1 | 3.3 | 0.1 | 4.5 | 0.0 | 1.3 | | |
| Delay (s) | 20.0 | 24.0 | 22.6 | 16.7 | 23.6 | 15.4 | 16.6 | | |
| Level of Service | C | C | C | B | C | B | B | | |
| Approach Delay (s) | | 22.2 | | | | 20.3 | 16.6 | | |
| Approach LOS | | C | | | | C | B | | |

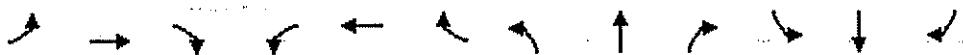
Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 18.7 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.55 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 12.0 |
| Intersection Capacity Utilization | 52.8% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

2: Capitol Mall & 3rd St

1/11/2007



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|-------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↑ | ↑↑↑ | 0 | 180 | 205 | 33 | 0 | 0 | 0 | 320 | 816 | 262 |
| Volume (vph) | 66 | 915 | 0 | 180 | 205 | 33 | 0 | 0 | 0 | 320 | 816 | 262 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | 4.0 | | 4.0 | 4.0 | | | | | | 5.5 | 5.0 |
| Lane Util. Factor | 1.00 | 0.91 | | 1.00 | 0.95 | | | | | | 0.86 | 0.86 |
| Frt | 1.00 | 1.00 | | 1.00 | 0.98 | | | | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | | | | 0.99 | 1.00 |
| Satd. Flow (prot) | 1770 | 5085 | | 1770 | 3466 | | | | | | 4725 | 1362 |
| Flt Permitted | 0.95 | 1.00 | | 0.19 | 1.00 | | | | | | 0.99 | 1.00 |
| Satd. Flow (perm) | 1770 | 5085 | | 361 | 3466 | | | | | | 4725 | 1362 |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 66 | 915 | 0 | 180 | 205 | 33 | 0 | 0 | 0 | 320 | 816 | 262 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 3 | 161 |
| Lane Group Flow (vph) | 66 | 915 | 0 | 180 | 223 | 0 | 0 | 0 | 0 | 0 | 1159 | 75 |
| Turn Type | Prot | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | 1 | 6 | | 5 | 2 | | | | | 4 | | 4 |
| Permitted Phases | | | | 2 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | 5.5 | 25.6 | | 39.4 | 30.4 | | | | | | 22.1 | 22.1 |
| Effective Green, g (s) | 5.5 | 25.1 | | 38.9 | 29.9 | | | | | | 21.6 | 22.1 |
| Actuated g/C Ratio | 0.08 | 0.36 | | 0.56 | 0.43 | | | | | | 0.31 | 0.32 |
| Clearance Time (s) | 3.5 | 3.5 | | 3.5 | 3.5 | | | | | | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 2.0 | | 2.0 | 2.0 | | | | | | 2.0 | 2.0 |
| Lane Grp Cap (vph) | 139 | 1823 | | 398 | 1480 | | | | | | 1458 | 430 |
| v/s Ratio Prot | 0.04 | c0.18 | | c0.06 | 0.06 | | | | | | 0.25 | 0.05 |
| v/s Ratio Perm | | | | 0.19 | | | | | | | 0.79 | 0.17 |
| v/c Ratio | 0.47 | 0.50 | | 0.45 | 0.15 | | | | | | 22.2 | 17.3 |
| Uniform Delay, d1 | 30.9 | 17.6 | | 8.8 | 12.3 | | | | | | 0.78 | 0.77 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | | | | 2.6 | 0.1 |
| Incremental Delay, d2 | 2.5 | 0.1 | | 0.3 | 0.2 | | | | | | 19.9 | 13.4 |
| Delay (s) | 33.4 | 17.6 | | 9.1 | 12.5 | | | | | | B | B |
| Level of Service | C | B | | A | B | | | | | | B | B |
| Approach Delay (s) | | 18.7 | | | 11.0 | | | 0.0 | | | 18.8 | |
| Approach LOS | | B | | | B | | | A | | | B | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 17.6 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.61 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 13.5 |
| Intersection Capacity Utilization | 63.1% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis
3: N St & 3rd St

1/11/2007



| Movement | EBT | EBR | SBL | SBT | SEL | SER |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | | | | | | |
| Volume (vph) | 74 | 4 | 723 | 423 | 480 | 160 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | | | 3.5 | 3.5 | |
| Lane Util. Factor | 1.00 | | | 0.91 | 0.97 | |
| Frt | 0.99 | | | 1.00 | 0.96 | |
| Frt Protected | 1.00 | | | 0.97 | 0.96 | |
| Satd. Flow (prot) | 1850 | | | 4930 | 3352 | |
| Frt Permitted | 1.00 | | | 0.97 | 0.96 | |
| Satd. Flow (perm) | 1850 | | | 4930 | 3352 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 74 | 4 | 723 | 423 | 480 | 160 |
| RTOR Reduction (vph) | 2 | 0 | 0 | 183 | 0 | 0 |
| Lane Group Flow (vph) | 76 | 0 | 0 | 963 | 640 | 0 |
| Turn Type | | | Perm | | | |
| Protected Phases | 6 | | | 2 | 5 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 12.5 | | | 29.5 | 17.5 | |
| Effective Green, g (s) | 12.5 | | | 29.5 | 17.5 | |
| Actuated g/C Ratio | 0.18 | | | 0.42 | 0.25 | |
| Clearance Time (s) | 3.5 | | | 3.5 | 3.5 | |
| Lane Grp Cap (vph) | 330 | | | 2078 | 838 | |
| v/s Ratio Prot | 0.04 | | | | 0.19 | |
| v/s Ratio Perm | | | | 0.20 | | |
| v/c Ratio | 0.23 | | | 0.46 | 0.76 | |
| Uniform Delay, d1 | 24.6 | | | 14.6 | 24.3 | |
| Progression Factor | 1.00 | | | 0.37 | 1.00 | |
| Incremental Delay, d2 | 1.6 | | | 0.6 | 6.5 | |
| Delay (s) | 26.2 | | | 6.0 | 30.9 | |
| Level of Service | C | | | A | C | |
| Approach Delay (s) | 26.2 | | | 6.0 | 30.9 | |
| Approach LOS | C | | | A | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 15.4 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.50 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 10.5 |
| Intersection Capacity Utilization | 77.1% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1: L St & 3rd St

1/11/2007



| Movement | WBL | WBT | WBR | WBR2 | NBL | NBT | SBT | SBR | SBR2 |
|------------------------|---------------------|------|------|------|-------|------|-------|------|------|
| Lane Configurations | ↑ ↗ ↖ ↘ ↗ ↖ ↗ ↘ ↗ ↖ | | | | | | | | |
| Volume (vph) | 483 | 600 | 1185 | 190 | 82 | 70 | 866 | 362 | 75 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 | 4.0 |
| Lane Util. Factor | 0.95 | 0.91 | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | | |
| Frt | 1.00 | 0.95 | 0.85 | 0.85 | 1.00 | 1.00 | 0.95 | | |
| Flt Protected | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | |
| Satd. Flow (prot) | 1681 | 1607 | 1504 | 1583 | 1770 | 1863 | 4829 | | |
| Flt Permitted | 0.95 | 1.00 | 1.00 | 1.00 | 0.95 | 1.00 | 1.00 | | |
| Satd. Flow (perm) | 1681 | 1607 | 1504 | 1583 | 1770 | 1863 | 4829 | | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 483 | 600 | 1185 | 190 | 82 | 70 | 866 | 362 | 75 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 87 | 0 | 0 | 9 | 0 | 0 |
| Lane Group Flow (vph) | 435 | 968 | 865 | 103 | 82 | 70 | 1294 | 0 | 0 |
| Turn Type | Perm | | Perm | Perm | Prot | | | | |
| Protected Phases | | 2 | | | 3 | 8 | 4 | | |
| Permitted Phases | 2 | | 2 | 2 | | | | | |
| Actuated Green, G (s) | 38.5 | 38.5 | 38.5 | 38.5 | 4.0 | 24.0 | 16.5 | | |
| Effective Green, g (s) | 38.0 | 38.0 | 38.0 | 38.0 | 4.0 | 24.0 | 16.0 | | |
| Actuated g/C Ratio | 0.54 | 0.54 | 0.54 | 0.54 | 0.06 | 0.34 | 0.23 | | |
| Clearance Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 4.0 | 4.0 | 3.5 | | |
| Lane Grp Cap (vph) | 913 | 872 | 816 | 859 | 101 | 639 | 1104 | | |
| v/s Ratio Prot | | | | | c0.05 | 0.04 | c0.27 | | |
| v/s Ratio Perm | 0.26 | 0.60 | 0.58 | 0.07 | | | | | |
| v/c Ratio | 0.48 | 1.11 | 1.06 | 0.12 | 0.81 | 0.11 | 1.17 | | |
| Uniform Delay, d1 | 9.9 | 16.0 | 16.0 | 7.8 | 32.6 | 15.7 | 27.0 | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.00 | 0.61 | 0.84 | 1.00 | | |
| Incremental Delay, d2 | 1.8 | 65.3 | 48.7 | 0.3 | 38.4 | 0.3 | 87.2 | | |
| Delay (s) | 11.6 | 81.3 | 64.7 | 8.1 | 58.3 | 13.4 | 114.2 | | |
| Level of Service | B | F | E | A | E | B | F | | |
| Approach Delay (s) | 57.5 | | | | | 37.6 | 114.2 | | |
| Approach LOS | | E | | | | D | F | | |

| Intersection Summary | | HCM Level of Service | | E |
|-----------------------------------|-------|----------------------|--|------|
| HCM Average Control Delay | 75.6 | | | |
| HCM Volume to Capacity ratio | 1.11 | | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | | 12.0 |
| Intersection Capacity Utilization | 90.0% | ICU Level of Service | | E |
| Analysis Period (min) | 15 | | | |
| c Critical Lane Group | | | | |

HCM Signalized Intersection Capacity Analysis

2: Capitol Mall & 3rd St

1/11/2007

| Movement | E BL | E BT | E BR | W BL | W BT | W BR | N BL | N BT | N BR | S BL | S BT | S BR |
|------------------------|------|------|------|-------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↑ | ↑↑ | | ↑ | ↑↑ | | | | | ↑↑ | | ↑ |
| Volume (vph) | 176 | 626 | 0 | 511 | 693 | 98 | 0 | 0 | 0 | 138 | 1192 | 210 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | 4.0 | | 4.0 | 4.0 | | | | | | 5.5 | 5.0 |
| Lane Util. Factor | 1.00 | 0.91 | | 1.00 | 0.95 | | | | | | 0.86 | 0.86 |
| Frt | 1.00 | 1.00 | | 1.00 | 0.98 | | | | | | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | | | | 0.99 | 1.00 |
| Satd. Flow (prot) | 1770 | 5085 | | 1770 | 3473 | | | | | | 4770 | 1362 |
| Flt Permitted | 0.95 | 1.00 | | 0.28 | 1.00 | | | | | | 0.99 | 1.00 |
| Satd. Flow (perm) | 1770 | 5085 | | 520 | 3473 | | | | | | 4770 | 1362 |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 176 | 626 | 0 | 511 | 693 | 98 | 0 | 0 | 0 | 138 | 1192 | 210 |
| RTOR Reduction (vph) | 0 | 0 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 2 | 132 |
| Lane Group Flow (vph) | 176 | 626 | 0 | 511 | 775 | 0 | 0 | 0 | 0 | 0 | 1349 | 57 |
| Turn Type | Prot | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | 1 | 6 | | 5 | 2 | | | | | | 4 | |
| Permitted Phases | | | | 2 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | 9.2 | 20.3 | | 40.5 | 27.8 | | | | | | 21.0 | 21.0 |
| Effective Green, g (s) | 9.2 | 19.8 | | 40.0 | 27.3 | | | | | | 20.5 | 21.0 |
| Actuated g/C Ratio | 0.13 | 0.28 | | 0.57 | 0.39 | | | | | | 0.29 | 0.30 |
| Clearance Time (s) | 3.5 | 3.5 | | 3.5 | 3.5 | | | | | | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 2.0 | | 2.0 | 2.0 | | | | | | 2.0 | 2.0 |
| Lane Grp Cap (vph) | 233 | 1438 | | 586 | 1354 | | | | | | 1397 | 409 |
| v/s Ratio Prot | 0.10 | 0.12 | | c0.20 | 0.22 | | | | | | 0.28 | 0.04 |
| v/s Ratio Perm | | | | c0.30 | | | | | | | 0.97 | 0.14 |
| w/c Ratio | 0.76 | 0.44 | | 0.87 | 0.57 | | | | | | 24.4 | 17.9 |
| Uniform Delay, d1 | 29.3 | 20.5 | | 10.2 | 16.8 | | | | | | 0.61 | 0.34 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | | | | 10.6 | 0.0 |
| Incremental Delay, d2 | 13.0 | 0.1 | | 13.1 | 1.8 | | | | | | 25.5 | 6.0 |
| Delay (s) | 42.3 | 20.6 | | 23.3 | 18.5 | | | | | | C | A |
| Level of Service | D | C | | C | B | | | | | | | |
| Approach Delay (s) | | 25.4 | | | 20.4 | | | 0.0 | | | 23.1 | |
| Approach LOS | | C | | | C | | | A | | | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 22.6 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.89 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 9.5 |
| Intersection Capacity Utilization | 79.0% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
3: N St & 3rd St

1/11/2007



| Movement | EBT | EBR | SBL | SBT | SED | SER |
|------------------------|------|------|------|------|------|------|
| Lane Configurations | | | | | | |
| Volume (vph) | 117 | 25 | 338 | 1376 | 319 | 253 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | | | 3.5 | 3.5 | |
| Lane Util. Factor | 1.00 | | | 0.91 | 0.97 | |
| Frt | 0.98 | | | 1.00 | 0.93 | |
| Flt Protected | 1.00 | | | 0.99 | 0.97 | |
| Satd. Flow (prot) | 1818 | | | 5036 | 3282 | |
| Flt Permitted | 1.00 | | | 0.99 | 0.97 | |
| Satd. Flow (perm) | 1818 | | | 5036 | 3282 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 117 | 25 | 338 | 1376 | 319 | 253 |
| RTOR Reduction (vph) | 11 | 0 | 0 | 60 | 0 | 0 |
| Lane Group Flow (vph) | 131 | 0 | 0 | 1654 | 572 | 0 |
| Turn Type | | | Perm | | | |
| Protected Phases | 6 | | | 2 | 5 | |
| Permitted Phases | | | 2 | | | |
| Actuated Green, G (s) | 12.5 | | | 29.5 | 17.5 | |
| Effective Green, g (s) | 12.5 | | | 29.5 | 17.5 | |
| Actuated g/C Ratio | 0.18 | | | 0.42 | 0.25 | |
| Clearance Time (s) | 3.5 | | | 3.5 | 3.5 | |
| Lane Grp Cap (vph) | 325 | | | 2122 | 821 | |
| v/s Ratio Prot | 0.07 | | | 0.17 | | |
| v/s Ratio Perm | | | | 0.33 | | |
| v/c Ratio | 0.40 | | | 0.78 | 0.70 | |
| Uniform Delay, d1 | 25.5 | | | 17.4 | 23.8 | |
| Progression Factor | 1.00 | | | 0.41 | 1.00 | |
| Incremental Delay, d2 | 3.7 | | | 1.2 | 4.9 | |
| Delay (s) | 29.2 | | | 8.3 | 28.7 | |
| Level of Service | C | | | A | C | |
| Approach Delay (s) | 29.2 | | | 8.3 | 28.7 | |
| Approach LOS | C | | | A | C | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 14.3 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.68 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 10.5 |
| Intersection Capacity Utilization | 68.9% | ICU Level of Service | C |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

1: L St & 3rd St

1/11/2007



| Movement | WBL | WBR | WBR2 | NBL | NBT | NBR | SBL | SBT | SBR | SEL | SER |
|------------------------|--------|--------|------|-------|------|------|------|-------|------|------|------|
| Lane Configurations | YY | Y | Y | Y | ↑ | ↑ | ↑↑ | ↑↑ | ↓ | ↓ | ↓ |
| Volume (vph) | 437 | 246 | 45 | 43 | 30 | 0 | 0 | 1235 | 21 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.5 | 3.5 | | | 4.0 | | | |
| Lane Util. Factor | 0.97 | 0.91 | 1.00 | 1.00 | 1.00 | | | 0.91 | | | |
| Fr _t | 0.99 | 0.85 | 0.85 | 1.00 | 1.00 | | | 1.00 | | | |
| Flt Protected | 0.96 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | | | |
| Satd. Flow (prot) | 3416 | 1441 | 1583 | 1770 | 1863 | | | 5073 | | | |
| Flt Permitted | 0.96 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | | | |
| Satd. Flow (perm) | 3416 | 1441 | 1583 | 1770 | 1863 | | | 5073 | | | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 437 | 246 | 45 | 43 | 30 | 0 | 0 | 1235 | 21 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 471 | 212 | 14 | 43 | 30 | 0 | 0 | 1254 | 0 | 0 | 0 |
| Turn Type | custom | custom | | Prot | | | | | | | |
| Protected Phases | | | | 3 | 8 | | | 4 | | | |
| Permitted Phases | 2 | 2 | 2 | | | | | | | | |
| Actuated Green, G (s) | 22.5 | 22.5 | 22.5 | 6.5 | 40.5 | | | 30.5 | | | |
| Effective Green, g (s) | 22.0 | 22.0 | 22.0 | 6.5 | 40.5 | | | 30.0 | | | |
| Actuated g/C Ratio | 0.31 | 0.31 | 0.31 | 0.09 | 0.58 | | | 0.43 | | | |
| Clearance Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | | 3.5 | | | |
| Lane Grp Cap (vph) | 1074 | 453 | 498 | 164 | 1078 | | | 2174 | | | |
| v/s Ratio Prot | | | | c0.02 | 0.02 | | | c0.25 | | | |
| v/s Ratio Perm | 0.14 | c0.15 | 0.01 | | | | | | | | |
| v/c Ratio | 0.44 | 0.47 | 0.03 | 0.26 | 0.03 | | | 0.58 | | | |
| Uniform Delay, d1 | 19.1 | 19.3 | 16.6 | 29.5 | 6.3 | | | 15.2 | | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 0.63 | 2.40 | | | 1.00 | | | |
| Incremental Delay, d2 | 1.3 | 3.4 | 0.1 | 3.8 | 0.0 | | | 1.1 | | | |
| Delay (s) | 20.4 | 22.7 | 16.7 | 22.4 | 15.2 | | | 16.3 | | | |
| Level of Service | C | C | B | C | B | | | B | | | |
| Approach Delay (s) | 20.8 | | | | 19.5 | | | 16.3 | | 0.0 | |
| Approach LOS | C | | | | B | | | B | | A | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 18.0 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.50 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 11.5 |
| Intersection Capacity Utilization | 52.7% | ICU Level of Service | A |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

2: Capitol Mall & 3rd St

1/11/2007



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|--------|------|-------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↑ | ↑↑↑ | | ↑ | ↑↑ | | | | | ↑↑↑ | ↑↑↑ | ↑ |
| Volume (vph) | 66 | 915 | 640 | 180 | 205 | 33 | 0 | 0 | 0 | 320 | 816 | 797 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | 4.0 | | 4.0 | 4.0 | | | | | 5.5 | 5.0 | |
| Lane Util. Factor | 1.00 | 0.91 | | 1.00 | 0.95 | | | | | 0.86 | 0.86 | |
| Frt | 1.00 | 0.94 | | 1.00 | 0.98 | | | | | 0.96 | 0.85 | |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | | | 0.99 | 1.00 | |
| Satd. Flow (prot) | 1770 | 4771 | | 1770 | 3466 | | | | | 4586 | 1362 | |
| Flt Permitted | 0.95 | 1.00 | | 0.15 | 1.00 | | | | | 0.99 | 1.00 | |
| Satd. Flow (perm) | 1770 | 4771 | | 274 | 3466 | | | | | 4586 | 1362 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 66 | 915 | 640 | 180 | 205 | 33 | 0 | 0 | 0 | 320 | 816 | 797 |
| RTOR Reduction (vph) | 0 | 97 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 80 | 294 | |
| Lane Group Flow (vph) | 66 | 1458 | 0 | 180 | 222 | 0 | 0 | 0 | 0 | 1407 | 152 | |
| Turn Type | Prot | | | pm+pt | | | | | | Perm | Perm | |
| Protected Phases | 1 | 6 | | 5 | 2 | | | | | 4 | | |
| Permitted Phases | | | | 2 | | | | | | 4 | | |
| Actuated Green, G (s) | 5.5 | 23.7 | | 37.7 | 28.7 | | | | | 23.8 | 23.8 | |
| Effective Green, g (s) | 5.5 | 23.2 | | 37.2 | 28.2 | | | | | 23.3 | 23.8 | |
| Actuated g/C Ratio | 0.08 | 0.33 | | 0.53 | 0.40 | | | | | 0.33 | 0.34 | |
| Clearance Time (s) | 3.5 | 3.5 | | 3.5 | 3.5 | | | | | 5.0 | 5.0 | |
| Vehicle Extension (s) | 3.0 | 2.0 | | 2.0 | 2.0 | | | | | 2.0 | 2.0 | |
| Lane Grp Cap (vph) | 139 | 1581 | | 359 | 1396 | | | | | 1526 | 463 | |
| v/s Ratio Prot | 0.04 | c0.31 | | c0.07 | 0.06 | | | | | | | |
| v/s Ratio Perm | | | | 0.19 | | | | | | 0.31 | 0.11 | |
| v/c Ratio | 0.47 | 1.03dr | | 0.50 | 0.16 | | | | | 0.92 | 0.33 | |
| Uniform Delay, d1 | 30.9 | 22.5 | | 12.4 | 13.3 | | | | | 22.5 | 17.2 | |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | | | 0.72 | 0.88 | |
| Incremental Delay, d2 | 2.5 | 9.2 | | 0.4 | 0.2 | | | | | 8.6 | 0.1 | |
| Delay (s) | 33.4 | 31.7 | | 12.8 | 13.6 | | | | | 24.7 | 15.3 | |
| Level of Service | C | C | | B | B | | | | | C | B | |
| Approach Delay (s) | | 31.8 | | | 13.3 | | | 0.0 | | 22.5 | | |
| Approach LOS | | C | | | B | | | A | | C | | |

Intersection Summary:

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 25.3 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.85 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 13.5 |
| Intersection Capacity Utilization | 81.4% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

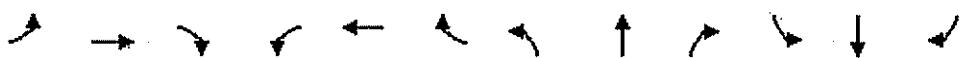
dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: N St & 3rd St

1/11/2007



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|------|------|------|------|------|------|--------|------|
| Lane Configurations | | → | | | | | | | | ↑↑↑ | | |
| Volume (vph) | 0 | 74 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1203 | 583 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 3.5 | | | | | | | | | 3.5 | |
| Lane Util. Factor | | 1.00 | | | | | | | | | 0.91 | |
| Fr _t | | 0.99 | | | | | | | | | 1.00 | |
| Flt Protected | | 1.00 | | | | | | | | | 0.97 | |
| Satd. Flow (prot) | | 1850 | | | | | | | | | 4920 | |
| Flt Permitted | | 1.00 | | | | | | | | | 0.97 | |
| Satd. Flow (perm) | | 1850 | | | | | | | | | 4920 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 0 | 74 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1203 | 583 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 278 | 0 |
| Lane Group Flow (vph) | 0 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1508 | 0 |
| Turn Type | | | | | | | | | | Perm | | |
| Protected Phases | | 6 | | | | | | | | | 4 | |
| Permitted Phases | | | | | | | | | | | 4 | |
| Actuated Green, G (s) | | 18.5 | | | | | | | | | 44.5 | |
| Effective Green, g (s) | | 18.5 | | | | | | | | | 44.5 | |
| Actuated g/C Ratio | | 0.26 | | | | | | | | | 0.64 | |
| Clearance Time (s) | | 3.5 | | | | | | | | | 3.5 | |
| Lane Grp Cap (vph) | | 489 | | | | | | | | | 3128 | |
| v/s Ratio Prot | | c0.04 | | | | | | | | | | |
| v/s Ratio Perm | | | | | | | | | | | 0.31 | |
| v/c Ratio | | 0.15 | | | | | | | | | 0.86dl | |
| Uniform Delay, d1 | | 19.7 | | | | | | | | | 6.7 | |
| Progression Factor | | 1.00 | | | | | | | | | 1.76 | |
| Incremental Delay, d2 | | 0.7 | | | | | | | | | 0.3 | |
| Delay (s) | | 20.4 | | | | | | | | | 12.1 | |
| Level of Service | | C | | | | | | | | | B | |
| Approach Delay (s) | | 20.4 | | | | 0.0 | | | 0.0 | | 12.1 | |
| Approach LOS | | C | | | | A | | | A | | B | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 12.4 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.39 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 7.0 |
| Intersection Capacity Utilization | 81.6% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1: L St & 3rd St

1/11/2007

| Movement | WBL | WBR | WBR2 | NBL | NBT | NBR | SBL | SBT | SBR | SEL | SER |
|------------------------|--------|--------|------|-------|------|------|------|-------|------|------|------|
| Lane Configurations | ↑↑ | ↑ | ↑ | ↑ | ↑ | | | ↑↑↑ | | | |
| Volume (vph) | 1083 | 1185 | 190 | 82 | 70 | 0 | 0 | 1228 | 75 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.5 | 3.5 | | | 4.0 | | | |
| Lane Util Factor | 0.97 | 0.91 | 1.00 | 1.00 | 1.00 | | | 0.91 | | | |
| Frt | 0.95 | 0.85 | 0.85 | 1.00 | 1.00 | | | 0.99 | | | |
| Flt Protected | 0.97 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | | | |
| Satd. Flow (prot) | 3333 | 1441 | 1583 | 1770 | 1863 | | | 5041 | | | |
| Flt Permitted | 0.97 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | | | |
| Satd. Flow (perm) | 3333 | 1441 | 1583 | 1770 | 1863 | | | 5041 | | | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 1083 | 1185 | 190 | 82 | 70 | 0 | 0 | 1228 | 75 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 93 | 0 | 0 | 0 | 0 | 10 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1557 | 711 | 97 | 82 | 70 | 0 | 0 | 1293 | 0 | 0 | 0 |
| Turn Type | custom | custom | | Prot | | | | | | | |
| Protected Phases | | | | 3 | 8 | | | 4 | | | |
| Permitted Phases | 2 | 2 | 2 | | | | | | | | |
| Actuated Green, G (s) | 36.1 | 36.1 | 36.1 | 4.5 | 26.9 | | | 18.9 | | | |
| Effective Green, g (s) | 35.6 | 35.6 | 35.6 | 4.5 | 26.9 | | | 18.4 | | | |
| Actuated g/C Ratio | 0.51 | 0.51 | 0.51 | 0.06 | 0.38 | | | 0.26 | | | |
| Clearance Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | | 3.5 | | | |
| Lane Grp Cap (vph) | 1695 | 733 | 805 | 114 | 716 | | | 1325 | | | |
| v/s Ratio Prot | | | | c0.05 | 0.04 | | | c0.26 | | | |
| v/s Ratio Perm | 0.47 | c0.49 | 0.06 | | | | | | | | |
| v/c Ratio | 0.92 | 0.97 | 0.12 | 0.72 | 0.10 | | | 0.98 | | | |
| Uniform Delay, d1 | 15.9 | 16.7 | 9.0 | 32.1 | 13.8 | | | 25.6 | | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 0.57 | 0.97 | | | 1.00 | | | |
| Incremental Delay, d2 | 9.5 | 26.7 | 0.3 | 15.1 | 0.1 | | | 19.6 | | | |
| Delay (s) | 25.4 | 43.4 | 9.3 | 33.5 | 13.4 | | | 45.2 | | | |
| Level of Service | C | D | A | C | B | | | D | | | |
| Approach Delay (s) | 29.3 | | | | 24.2 | | | 45.2 | 0.0 | | |
| Approach LOS | C | | | | C | | | D | A | | |

| Intersection Summary | | | | | | | | | | | |
|-----------------------------------|-------|----------------------|--|--|--|--|--|------|--|--|--|
| HCM Average Control Delay | 34.4 | HCM Level of Service | | | | | | C | | | |
| HCM Volume to Capacity ratio | 0.95 | | | | | | | | | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | | | | | | 11.5 | | | |
| Intersection Capacity Utilization | 88.9% | ICU Level of Service | | | | | | E | | | |
| Analysis Period (min) | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis

2: Capitol Mall & 3rd St

1/11/2007



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|-------|--------|------|-------|------|------|------|------|------|------|------|------|
| Lane Configurations | ↑ | ↑↑↓ | | ↑ | ↑↓ | | | | | ↑↑↓ | ↑↑↓ | ↑ |
| Volume (vph) | 176 | 626 | 572 | 511 | 693 | 98 | 0 | 0 | 0 | 138 | 1192 | 1172 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | 4.0 | | 4.0 | 4.0 | | | | | | 5.5 | 5.0 |
| Lane Util. Factor | 1.00 | 0.91 | | 1.00 | 0.95 | | | | | | 0.86 | 0.86 |
| Fr _t | 1.00 | 0.93 | | 1.00 | 0.98 | | | | | | 0.95 | 0.85 |
| Flt Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | | | | 1.00 | 1.00 |
| Satd. Flow (prot) | 1770 | 4721 | | 1770 | 3473 | | | | | | 4569 | 1362 |
| Flt Permitted | 0.95 | 1.00 | | 0.18 | 1.00 | | | | | | 1.00 | 1.00 |
| Satd. Flow (perm) | 1770 | 4721 | | 339 | 3473 | | | | | | 4569 | 1362 |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 176 | 626 | 572 | 511 | 693 | 98 | 0 | 0 | 0 | 138 | 1192 | 1172 |
| RTOR Reduction (vph) | 0 | 27 | 0 | 0 | 16 | 0 | 0 | 0 | 0 | 0 | 114 | 205 |
| Lane Group Flow (vph) | 176 | 1171 | 0 | 511 | 775 | 0 | 0 | 0 | 0 | 0 | 1802 | 381 |
| Turn Type | Prot | | | pm+pt | | | | | | Perm | | Perm |
| Protected Phases | 1 | 6 | | 5 | 2 | | | | | 4 | | |
| Permitted Phases | | | | 2 | | | | | | 4 | | 4 |
| Actuated Green, G (s) | 6.5 | 18.5 | | 37.5 | 27.5 | | | | | | 24.0 | 24.0 |
| Effective Green, g (s) | 6.5 | 18.0 | | 37.0 | 27.0 | | | | | | 23.5 | 24.0 |
| Actuated g/C Ratio | 0.09 | 0.26 | | 0.53 | 0.39 | | | | | | 0.34 | 0.34 |
| Clearance Time (s) | 3.5 | 3.5 | | 3.5 | 3.5 | | | | | | 5.0 | 5.0 |
| Vehicle Extension (s) | 3.0 | 2.0 | | 2.0 | 2.0 | | | | | | 2.0 | 2.0 |
| Lane Grp Cap (vph) | 164 | 1214 | | 486 | 1340 | | | | | | 1534 | 467 |
| v/s Ratio Prot | 0.10 | 0.25 | | c0.23 | 0.22 | | | | | | 0.39 | 0.28 |
| v/s Ratio Perm | | | | c0.33 | | | | | | | | |
| v/c Ratio | 1.07 | 1.32dr | | 1.05 | 0.58 | | | | | | 1.17 | 0.82 |
| Uniform Delay, d1 | 31.8 | 25.7 | | 18.1 | 17.0 | | | | | | 23.3 | 21.0 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | | | | 0.73 | 0.60 |
| Incremental Delay, d2 | 91.1 | 17.8 | | 55.0 | 1.8 | | | | | | 82.2 | 4.8 |
| Delay (s) | 122.9 | 43.5 | | 73.1 | 18.8 | | | | | | 99.1 | 17.3 |
| Level of Service | F | D | | E | B | | | | | | F | B |
| Approach Delay (s) | | 53.6 | | | 40.1 | | | | 0.0 | | 79.9 | |
| Approach LOS | | D | | | D | | | | A | | E | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 62.9 | HCM Level of Service | E |
| HCM Volume to Capacity ratio | 1.08 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 9.5 |
| Intersection Capacity Utilization | 99.0% | ICU Level of Service | F |
| Analysis Period (min) | 15 | | |

dr Defacto Right Lane. Recode with 1 though lane as a right lane

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: N St & 3rd St

1/11/2007



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↑ | | | | | | | | ↑↑ | | |
| Volume (vph) | 0 | 117 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 657 | 1629 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 3.5 | | | | | | | | | 3.5 | |
| Lane Util. Factor | | 1.00 | | | | | | | | | 0.91 | |
| Frt | | 0.98 | | | | | | | | | 1.00 | |
| Flt Protected | | 1.00 | | | | | | | | | 0.99 | |
| Satd. Flow (prot) | | 1818 | | | | | | | | | 5013 | |
| Flt Permitted | | 1.00 | | | | | | | | | 0.99 | |
| Satd. Flow (perm) | | 1818 | | | | | | | | | 5013 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 0 | 117 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 657 | 1629 | 0 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 104 | 0 |
| Lane Group Flow (vph) | 0 | 131 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2182 | 0 |
| Turn Type | | | | | | | | | | Perm | | |
| Protected Phases | | 6 | | | | | | | | | 4 | |
| Permitted Phases | | | | | | | | | | | 4 | |
| Actuated Green, G (s) | | 16.5 | | | | | | | | | 46.5 | |
| Effective Green, g (s) | | 16.5 | | | | | | | | | 46.5 | |
| Actuated g/C Ratio | | 0.24 | | | | | | | | | 0.66 | |
| Clearance Time (s) | | 3.5 | | | | | | | | | 3.5 | |
| Lane Grp Cap (vph) | | 429 | | | | | | | | | 3330 | |
| v/s Ratio Prot | | c0.07 | | | | | | | | | 0.44 | |
| v/s Ratio Perm | | | | | | | | | | | 0.66 | |
| v/c Ratio | | 0.31 | | | | | | | | | 7.0 | |
| Uniform Delay, d1 | | 22.0 | | | | | | | | | 0.44 | |
| Progression Factor | | 1.00 | | | | | | | | | 0.1 | |
| Incremental Delay, d2 | | 1.8 | | | | | | | | | 3.1 | |
| Delay (s) | | 23.9 | | | | | | | | | A | |
| Level of Service | | C | | | | | | | | | | A |
| Approach Delay (s) | | 23.9 | | | 0.0 | | | 0.0 | | | 3.1 | |
| Approach LOS | | C | | | A | | | A | | | A | |

| Intersection Summary | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 4.3 | HCM Level of Service | A |
| HCM Volume to Capacity ratio | 0.56 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 7.0 |
| Intersection Capacity Utilization | 59.8% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

1: L St & 3rd St

1/11/2007

| Movement | WBL | WBR | WBR2 | NBL | NBT | NBR | SBL | SBT | SBR | SEL | SER |
|------------------------|--------|--------|------|-------|------|------|------|-------|------|------|------|
| Lane Configurations | ↑↑ | ↑ | ↑ | ↑ | ↑ | ↑ | ↑↑↑ | | | | |
| Volume (vph) | 437 | 246 | 45 | 43 | 30 | 0 | 0 | 1235 | 21 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.5 | 3.5 | | | 4.0 | | | |
| Lane Util. Factor | 0.97 | 0.91 | 1.00 | 1.00 | 1.00 | | | 0.91 | | | |
| Frt | 0.99 | 0.85 | 0.85 | 1.00 | 1.00 | | | 1.00 | | | |
| Flt Protected | 0.96 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | | | |
| Satd. Flow (prot) | 3416 | 1441 | 1583 | 1770 | 1863 | | | 5073 | | | |
| Flt Permitted | 0.96 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | | | |
| Satd. Flow (perm) | 3416 | 1441 | 1583 | 1770 | 1863 | | | 5073 | | | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 437 | 246 | 45 | 43 | 30 | 0 | 0 | 1235 | 21 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 31 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 471 | 212 | 14 | 43 | 30 | 0 | 0 | 1254 | 0 | 0 | 0 |
| Turn Type | custom | custom | | Prot | | | | | | | |
| Protected Phases | | | | 3 | 8 | | | 4 | | | |
| Permitted Phases | 2 | 2 | 2 | | | | | | | | |
| Actuated Green, G (s) | 22.5 | 22.5 | 22.5 | 6.5 | 40.5 | | | 30.5 | | | |
| Effective Green, g (s) | 22.0 | 22.0 | 22.0 | 6.5 | 40.5 | | | 30.0 | | | |
| Actuated g/C Ratio | 0.31 | 0.31 | 0.31 | 0.09 | 0.58 | | | 0.43 | | | |
| Clearance Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | | 3.5 | | | |
| Lane Grp Cap (vph) | 1074 | 453 | 498 | 164 | 1078 | | | 2174 | | | |
| v/s Ratio Prot | | | | c0.02 | 0.02 | | | c0.25 | | | |
| v/s Ratio Perm | 0.14 | c0.15 | 0.01 | | | | | | | | |
| v/c Ratio | 0.44 | 0.47 | 0.03 | 0.26 | 0.03 | | | 0.58 | | | |
| Uniform Delay, d1 | 19.1 | 19.3 | 16.6 | 29.5 | 6.3 | | | 15.2 | | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 0.51 | 1.40 | | | 1.00 | | | |
| Incremental Delay, d2 | 1.3 | 3.4 | 0.1 | 3.7 | 0.0 | | | 1.1 | | | |
| Delay (s) | 20.4 | 22.7 | 16.7 | 18.8 | 8.9 | | | 16.3 | | | |
| Level of Service | C | C | B | B | A | | | B | | | |
| Approach Delay (s) | 20.8 | | | | 14.7 | | | 16.3 | | 0.0 | |
| Approach LOS | C | | | | B | | | B | | A | |

| Intersection Summary | | | | | | | | | | | |
|-----------------------------------|-------|----------------------|--|--|--|--|--|------|--|--|--|
| HCM Average Control Delay | 17.9 | HCM Level of Service | | | | | | B | | | |
| HCM Volume to Capacity ratio | 0.50 | | | | | | | | | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | | | | | | 11.5 | | | |
| Intersection Capacity Utilization | 52.7% | ICU Level of Service | | | | | | A | | | |
| Analysis Period (min) | 15 | | | | | | | | | | |
| c Critical Lane Group | | | | | | | | | | | |

HCM Signalized Intersection Capacity Analysis
2: Capitol Mall & 3rd St

1/11/2007



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|--------|------|-------|------|------|------|------|------|------|------|-------|
| Lane Configurations | ↑ | ↑↑↑ | | ↑ | ↑↑ | | | | | ↑↑↑ | | ↑ |
| Volume (vph) | 66 | 915 | 640 | 180 | 205 | 33 | 0 | 0 | 0 | 320 | 816 | 797 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | 4.0 | | 4.0 | 4.0 | | | | | | 5.5 | 4.0 |
| Lane Util. Factor | 1.00 | 0.91 | | 1.00 | 0.95 | | | | | | 0.91 | 1.00 |
| Frt | 1.00 | 0.94 | | 1.00 | 0.98 | | | | | | 1.00 | 0.85 |
| Fit Protected | 0.95 | 1.00 | | 0.95 | 1.00 | | | | | | 0.99 | 1.00 |
| Sald. Flow (prot) | 1770 | 4771 | | 1770 | 3466 | | | | | | 5015 | 1583 |
| Fit Permitted | 0.95 | 1.00 | | 0.12 | 1.00 | | | | | | 0.99 | 1.00 |
| Sald. Flow (perm) | 1770 | 4771 | | 231 | 3466 | | | | | | 5015 | 1583 |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 66 | 915 | 640 | 180 | 205 | 33 | 0 | 0 | 0 | 320 | 816 | 797 |
| RTOR Reduction (vph) | 0 | 64 | 0 | 0 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 66 | 1491 | 0 | 180 | 221 | 0 | 0 | 0 | 0 | 0 | 1136 | 797 |
| Turn Type | Prot | | | pm+pt | | | | | | Perm | | Free |
| Protected Phases | 1 | 6 | | 5 | 2 | | | | | | 4 | |
| Permitted Phases | | | | 2 | | | | | | 4 | | Free |
| Actuated Green, G (s) | 3.9 | 28.7 | | 42.3 | 34.9 | | | | | | 19.2 | 70.0 |
| Effective Green, g (s) | 3.9 | 28.2 | | 41.8 | 34.4 | | | | | | 18.7 | 70.0 |
| Actuated g/C Ratio | 0.06 | 0.40 | | 0.60 | 0.49 | | | | | | 0.27 | 1.00 |
| Clearance Time (s) | 3.5 | 3.5 | | 3.5 | 3.5 | | | | | | 5.0 | |
| Vehicle Extension (s) | 3.0 | 2.0 | | 2.0 | 2.0 | | | | | | 2.0 | |
| Lane Grp Cap (vph) | 99 | 1922 | | 349 | 1703 | | | | | | 1340 | 1583 |
| v/s Ratio Prot | 0.04 | c0.31 | | 0.07 | 0.06 | | | | | | 0.23 | c0.50 |
| v/s Ratio Perm | | | | 0.24 | | | | | | | | |
| v/c Ratio | 0.67 | 0.91dr | | 0.52 | 0.13 | | | | | | 0.85 | 0.50 |
| Uniform Delay, d1 | 32.4 | 18.2 | | 10.2 | 9.7 | | | | | | 24.3 | 0.0 |
| Progression Factor | 1.00 | 1.00 | | 1.00 | 1.00 | | | | | | 0.75 | 1.00 |
| Incremental Delay, d2 | 15.7 | 18 | | 0.5 | 0.2 | | | | | | 4.5 | 1.0 |
| Delay (s) | 48.1 | 20.0 | | 10.7 | 9.8 | | | | | | 22.6 | 1.0 |
| Level of Service | D | C | | B | A | | | | | | C | A |
| Approach Delay (s) | | 21.1 | | | 10.2 | | | 0.0 | | | 13.7 | |
| Approach LOS | | C | | | B | | | A | | | B | |

Intersection Summary

HCM Average Control Delay 16.4 HCM Level of Service B

HCM Volume to Capacity ratio 0.74

Actuated Cycle Length (s) 70.0

Intersection Capacity Utilization 75.5%

Analysis Period (min) 15

dr Defacto Right Lane. Recode with 1 though lane as a right lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: N St & 3rd St

1/11/2007



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|------|-------|------|------|------|------|------|------|------|--------|------|
| Lane Configurations | | | ↑ | | | | | | | ↑↑↑ | | |
| Volume (vph) | 0 | 74 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1203 | 583 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | | 3.5 | | | | | | | | 3.5 | |
| Lane Util. Factor | | | 1.00 | | | | | | | | 0.91 | |
| Frt | | | 0.99 | | | | | | | | 1.00 | |
| Flt Protected | | | 1.00 | | | | | | | | 0.97 | |
| Satd. Flow (prot) | | | 1850 | | | | | | | | 4920 | |
| Flt Permitted | | | 1.00 | | | | | | | | 0.97 | |
| Satd. Flow (perm) | | | 1850 | | | | | | | | 4920 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 0 | 74 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1203 | 583 | 0 |
| RTOR Reduction (vph) | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 278 | 0 |
| Lane Group Flow (vph) | 0 | 75 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1508 | 0 |
| Turn Type | | | | | | | | | | Perm | | |
| Protected Phases | | | 6 | | | | | | | | 4 | |
| Permitted Phases | | | | | | | | | | | 4 | |
| Actuated Green, G (s) | | | 18.5 | | | | | | | | 44.5 | |
| Effective Green, g (s) | | | 18.5 | | | | | | | | 44.5 | |
| Actuated g/C Ratio | | | 0.26 | | | | | | | | 0.64 | |
| Clearance Time (s) | | | 3.5 | | | | | | | | 3.5 | |
| Lane Grp Cap (vph) | | | 489 | | | | | | | | 3128 | |
| v/s Ratio Prot | | | c0.04 | | | | | | | | 0.31 | |
| v/s Ratio Perm | | | | | | | | | | | 0.86dl | |
| v/c Ratio | | | 0.15 | | | | | | | | 6.7 | |
| Uniform Delay, d1 | | | 19.7 | | | | | | | | 1.37 | |
| Progression Factor | | | 1.00 | | | | | | | | 0.4 | |
| Incremental Delay, d2 | | | 0.7 | | | | | | | | 9.5 | |
| Delay (s) | | | 20.4 | | | | | | | | A | |
| Level of Service | | | C | | | | | | | | | |
| Approach Delay (s) | | | 20.4 | | | 0.0 | | | 0.0 | | 9.5 | |
| Approach LOS | | | C | | | A | | | A | | A | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 10.0 | HCM Level of Service | B |
| HCM Volume to Capacity ratio | 0.39 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 7.0 |
| Intersection Capacity Utilization | 81.6% | ICU Level of Service | D |
| Analysis Period (min) | 15 | | |

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

1: L St & 3rd St

1/11/2007



| Movement | WBL | WBR | WBR2 | NBL | NBT | NBR | SBL | SBT | SBR | SEL | SER |
|------------------------|--------|--------|------|-------|------|------|------|-------|------|------|------|
| Lane Configurations | YY | Y | Y | Y | ↑ | ↑↑ | ↑↑ | ↑↑ | ↑↑ | ↑↑ | ↑↑ |
| Volume (vph) | 1083 | 1185 | 190 | 82 | 70 | 0 | 0 | 1228 | 75 | 0 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 4.0 | 4.0 | 4.0 | 3.5 | 3.5 | | | | | | |
| Lane Util. Factor | 0.97 | 0.91 | 1.00 | 1.00 | 1.00 | | | | | | |
| Frt | 0.95 | 0.85 | 0.85 | 1.00 | 1.00 | | | | | | |
| Flt Protected | 0.97 | 1.00 | 1.00 | 0.95 | 1.00 | | | | | | |
| Saltd. Flow (prot) | 3333 | 1441 | 1583 | 1770 | 1863 | | | 5041 | | | |
| Flt Permitted | 0.97 | 1.00 | 1.00 | 0.95 | 1.00 | | | 1.00 | | | |
| Saltd. Flow (perm) | 3333 | 1441 | 1583 | 1770 | 1863 | | | 5041 | | | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 1083 | 1185 | 190 | 82 | 70 | 0 | 0 | 1228 | 75 | 0 | 0 |
| RTOR Reduction (vph) | 0 | 0 | 95 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 1557 | 711 | 95 | 82 | 70 | 0 | 0 | 1294 | 0 | 0 | 0 |
| Turn Type | custom | custom | | Prot | | | | | | | |
| Protected Phases | | | | 3 | 8 | | | 4 | | | |
| Permitted Phases | 2 | 2 | 2 | | | | | | | | |
| Actuated Green, G (s) | 35.5 | 35.5 | 35.5 | 4.5 | 27.5 | | | 19.5 | | | |
| Effective Green, g (s) | 35.0 | 35.0 | 35.0 | 4.5 | 27.5 | | | 19.0 | | | |
| Actuated g/C Ratio | 0.50 | 0.50 | 0.50 | 0.06 | 0.39 | | | 0.27 | | | |
| Clearance Time (s) | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | | 3.5 | | | |
| Lane Grp Cap (vph) | 1667 | 721 | 792 | 114 | 732 | | | 1368 | | | |
| v/s Ratio Prot | | | | c0.05 | 0.04 | | | c0.26 | | | |
| v/s Ratio Perm | 0.47 | c0.49 | 0.06 | | | | | | | | |
| v/c Ratio | 0.93 | 0.99 | 0.12 | 0.72 | 0.10 | | | 0.95 | | | |
| Uniform Delay, d1 | 16.4 | 17.3 | 19.3 | 32.1 | 13.4 | | | 25.0 | | | |
| Progression Factor | 1.00 | 1.00 | 1.00 | 1.34 | 0.78 | | | 1.00 | | | |
| Incremental Delay, d2 | 11.1 | 30.3 | 0.3 | 24.8 | 0.2 | | | 14.4 | | | |
| Delay (s) | 27.5 | 47.6 | 9.6 | 68.0 | 10.6 | | | 39.4 | | | |
| Level of Service | C | D | A | E | B | | | D | | | |
| Approach Delay (s) | 31.9 | | | | 41.6 | | | 39.4 | | 0.0 | |
| Approach LOS | C | | | | D | | | D | | A | |

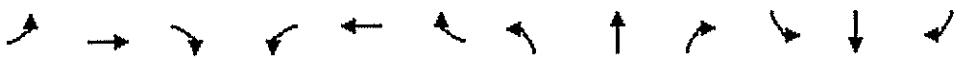
Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|------|
| HCM Average Control Delay | 34.8 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.95 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 11.5 |
| Intersection Capacity Utilization | 88.9% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |

HCM Signalized Intersection Capacity Analysis

2: Capitol Mall & 3rd St

1/11/2007



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|--------|------|-------|------|------|------|------|------|------|------|-------|
| Lane Configurations | ↑ | ↑↑↑ | - | ↑ | ↑↑ | - | - | - | - | ↑↑↑ | ↑↑↑ | ↑ |
| Volume (vph) | 176 | 626 | 572 | 511 | 693 | 98 | 0 | 0 | 0 | 138 | 1192 | 1172 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | 3.5 | 4.0 | - | 4.0 | 4.0 | - | - | - | - | - | 5.5 | 4.0 |
| Lane Util Factor | 1.00 | 0.91 | - | 1.00 | 0.95 | - | - | - | - | - | 0.91 | 1.00 |
| Fr _t | 1.00 | 0.93 | - | 1.00 | 0.98 | - | - | - | - | - | 1.00 | 0.85 |
| Flt Protected | 0.95 | 1.00 | - | 0.95 | 1.00 | - | - | - | - | - | 0.99 | 1.00 |
| Satd. Flow (prot) | 1770 | 4721 | - | 1770 | 3473 | - | - | - | - | - | 5059 | 1583 |
| Flt Permitted | 0.95 | 1.00 | - | 0.95 | 1.00 | - | - | - | - | - | 0.99 | 1.00 |
| Satd. Flow (perm) | 1770 | 4721 | - | 1770 | 3473 | - | - | - | - | - | 5059 | 1583 |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 176 | 626 | 572 | 511 | 693 | 98 | 0 | 0 | 0 | 138 | 1192 | 1172 |
| RTOR Reduction (vph) | 0 | 36 | 0 | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lane Group Flow (vph) | 176 | 1162 | 0 | 511 | 776 | 0 | 0 | 0 | 0 | 0 | 1330 | 1172 |
| Tum Type | Prot | | Prot | | | | | | | | Perm | Free |
| Protected Phases | 1 | 6 | | 5 | 2 | | | | | | 4 | |
| Permitted Phases | | | | | | | | | | | 4 | Free |
| Actuated Green, G (s) | 9.2 | 17.5 | - | 20.5 | 28.8 | - | - | - | - | - | 20.0 | 70.0 |
| Effective Green, g (s) | 9.2 | 17.0 | - | 20.0 | 28.3 | - | - | - | - | - | 19.5 | 70.0 |
| Actuated g/C Ratio | 0.13 | 0.24 | - | 0.29 | 0.40 | - | - | - | - | - | 0.28 | 1.00 |
| Clearance Time (s) | 3.5 | 3.5 | - | 3.5 | 3.5 | - | - | - | - | - | 5.0 | |
| Vehicle Extension (s) | 3.0 | 2.0 | - | 2.0 | 2.0 | - | - | - | - | - | 2.0 | |
| Lane Grp Cap (vph) | 233 | 1147 | - | 506 | 1404 | - | - | - | - | - | 1409 | 1583 |
| v/s Ratio Prot | 0.10 | c0.25 | - | c0.29 | 0.22 | - | - | - | - | - | 0.26 | c0.74 |
| v/s Ratio Perm | | | | | | | | | | | | |
| v/c Ratio | 0.76 | 1.36dr | - | 1.01 | 0.55 | - | - | - | - | - | 0.94 | 0.74 |
| Uniform Delay, d1 | 29.3 | 26.5 | - | 25.0 | 16.0 | - | - | - | - | - | 24.7 | 0.0 |
| Progression Factor | 1.00 | 1.00 | - | 1.00 | 1.00 | - | - | - | - | - | 0.96 | 1.00 |
| Incremental Delay, d2 | 13.0 | 29.8 | - | 42.5 | 1.6 | - | - | - | - | - | 7.0 | 1.5 |
| Delay (s) | 42.3 | 56.3 | - | 67.5 | 17.6 | - | - | - | - | - | 30.7 | 1.5 |
| Level of Service | D | E | - | E | B | - | - | - | - | - | C | A |
| Approach Delay (s) | | 54.5 | - | | 37.2 | - | - | - | - | - | 17.0 | |
| Approach LOS | | D | - | | D | - | - | - | - | - | B | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|-----|
| HCM Average Control Delay | 32.0 | HCM Level of Service | C |
| HCM Volume to Capacity ratio | 0.90 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 8.0 |
| Intersection Capacity Utilization | 90.3% | ICU Level of Service | E |
| Analysis Period (min) | 15 | | |

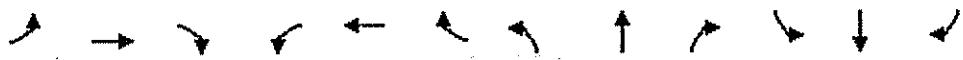
dr Defacto Right Lane. Recode with 1 though lane as a right lane

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: N St & 3rd St

1/11/2007



| Movement | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR |
|------------------------|------|-------|------|------|------|------|------|------|------|------|------|------|
| Lane Configurations | | ↑↓ | | | | | | | | ↑↑↑ | | |
| Volume (vph) | 0 | 117 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 657 | 1629 | 0 |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |
| Total Lost time (s) | | 3.5 | | | | | | | | | 3.5 | |
| Lane Util. Factor | | 1.00 | | | | | | | | | 0.91 | |
| Frt | | 0.98 | | | | | | | | | 1.00 | |
| Frt Protected | | 1.00 | | | | | | | | | 0.99 | |
| Satd. Flow (prot) | | 1818 | | | | | | | | | 5013 | |
| Frt Permitted | | 1.00 | | | | | | | | | 0.99 | |
| Satd. Flow (perm) | | 1818 | | | | | | | | | 5013 | |
| Peak-hour factor, PHF | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| Adj. Flow (vph) | 0 | 117 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 657 | 1629 | 0 |
| RTOR Reduction (vph) | 0 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 104 | 0 |
| Lane Group Flow (vph) | 0 | 131 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2182 | 0 |
| Turn Type | | | | | | | | | | Perm | | |
| Protected Phases | | 6 | | | | | | | | | 4 | |
| Permitted Phases | | | | | | | | | | | 4 | |
| Actuated Green, G (s) | | 18.5 | | | | | | | | | 44.5 | |
| Effective Green, g (s) | | 18.5 | | | | | | | | | 44.5 | |
| Actuated g/C Ratio | | 0.26 | | | | | | | | | 0.64 | |
| Clearance Time (s) | | 3.5 | | | | | | | | | 3.5 | |
| Lane Grp Cap (vph) | | 480 | | | | | | | | | 3187 | |
| v/s Ratio Prot | | c0.07 | | | | | | | | | 0.44 | |
| v/s Ratio Perm | | | | | | | | | | | 0.68 | |
| v/c Ratio | | 0.27 | | | | | | | | | 8.2 | |
| Uniform Delay, d1 | | 20.4 | | | | | | | | | 0.40 | |
| Progression Factor | | 1.00 | | | | | | | | | 0.3 | |
| Incremental Delay, d2 | | -1.4 | | | | | | | | | 3.6 | |
| Delay (s) | | 21.8 | | | | | | | | | A | |
| Level of Service | | C | | | | | | | | | | |
| Approach Delay (s) | | 21.8 | | | 0.0 | | | 0.0 | | | 3.6 | |
| Approach LOS | | C | | | A | | | A | | | A | |

Intersection Summary

| | | | |
|-----------------------------------|-------|----------------------|----|
| HCM Average Control Delay | 4.7 | HCM Level of Service | A |
| HCM Volume to Capacity ratio | 0.56 | | |
| Actuated Cycle Length (s) | 70.0 | Sum of lost time (s) | 70 |
| Intersection Capacity Utilization | 59.8% | ICU Level of Service | B |
| Analysis Period (min) | 15 | | |
| c Critical Lane Group | | | |